A McGRAW-HILL PUBLICATION

Chemical Week

Fermentation researchers (left) ready for new push . . p. 63 **Rail freight** (center) comes under scrutiny in Canadian sales-cost parley . . p. 89 **Blind workers** (right), but business as usual in this CPI plant . . p. 53

Polypropylene's foggy patent picture . . p. 22

November 7, 1959

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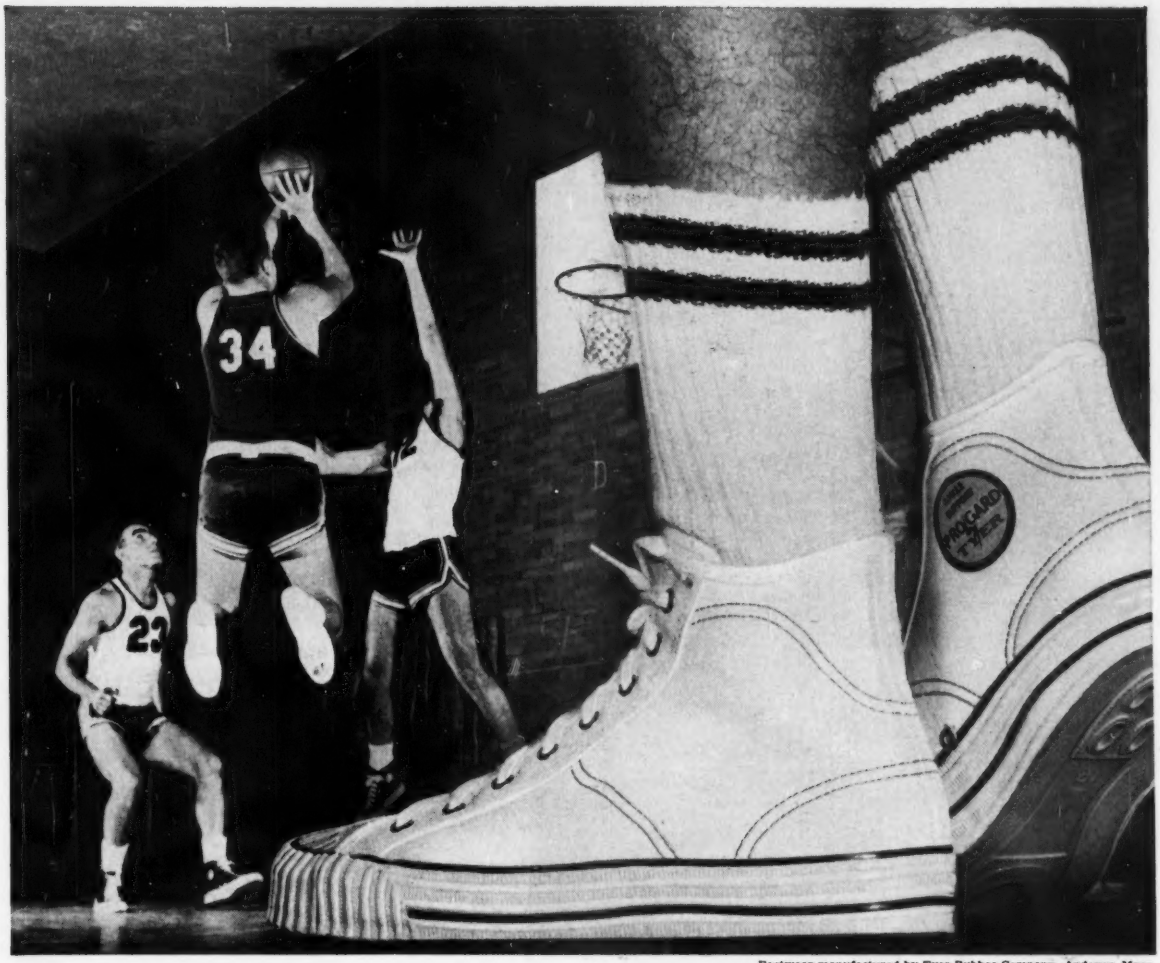

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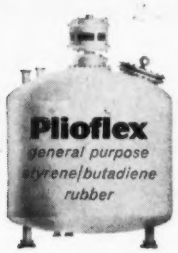

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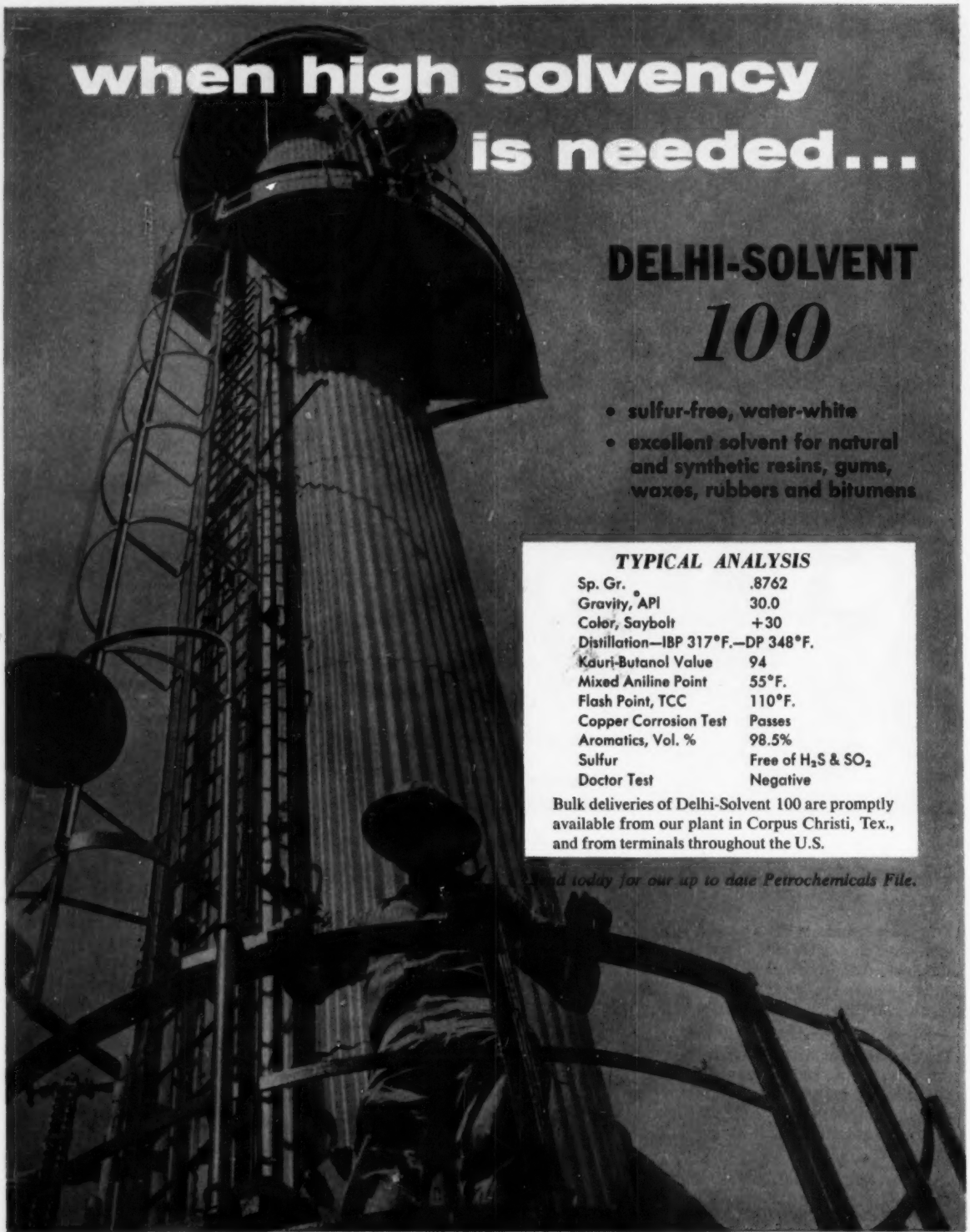

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Sp. Gr.	.8762
Gravity, API	30.0
Color, Saybolt	+30
Distillation—IBP 317°F.—DP 348°F.	
Kauri-Butanol Value	94
Mixed Aniline Point	55°F.
Flash Point, TCC	110°F.
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Aromatics, Vol. %	98.5%
Sulfur	Free of H_2S & SO_2
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Chemical Week

TOP OF THE WEEK

NOVEMBER 7, 1959

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24 Chemical economists express growing alarm over current trade trends; new figures point up export stake.

24 New on the chemical scene: a merged Stauffer and Victor Chemical; two new affiliates for Courtaulds; join-up of France's St. Gobain and Pechiney interests.

25 Latest figures on CPI companies' third-quarter sales and earnings show industrial chemical makers are hardest hit by steel strike.

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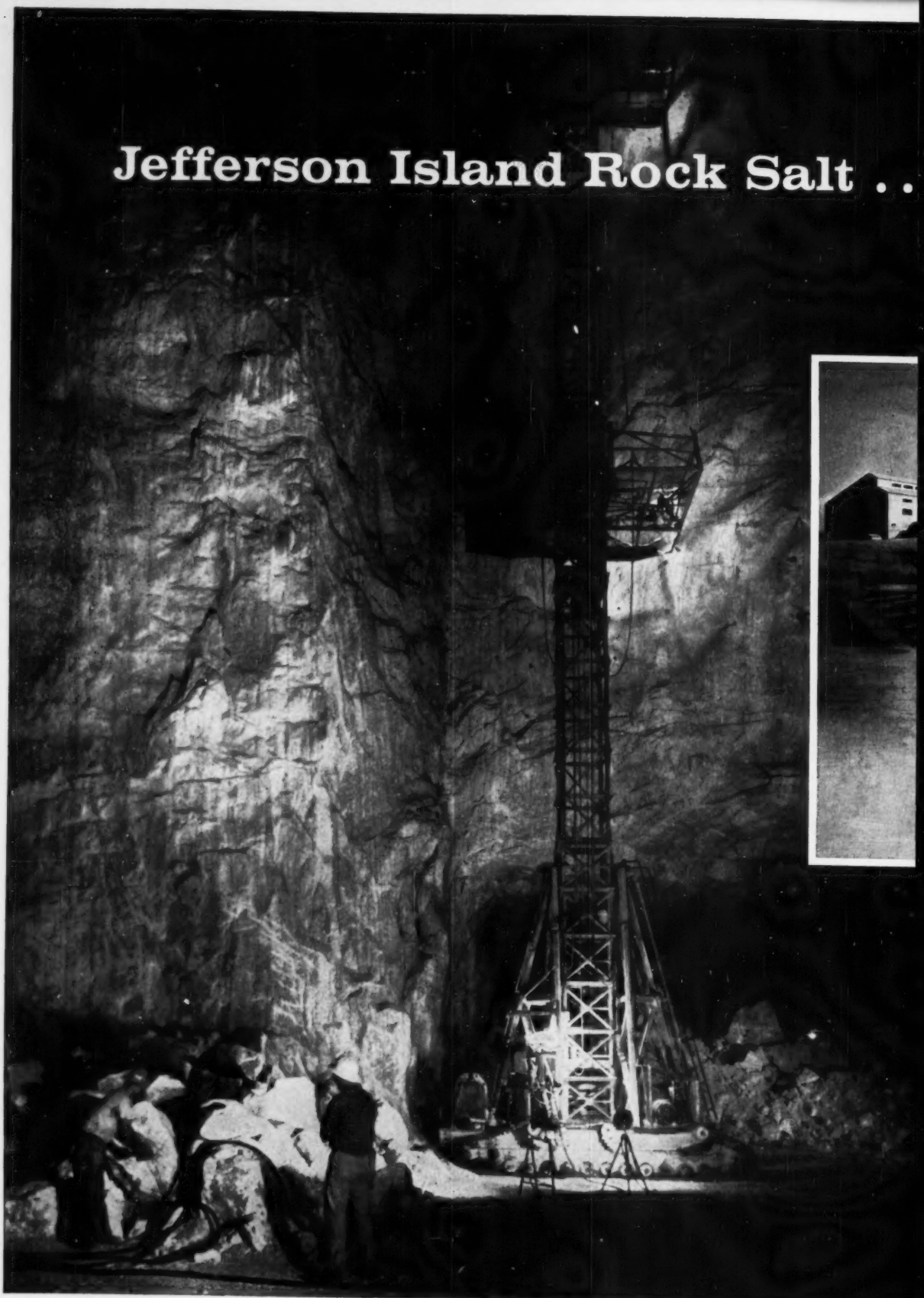
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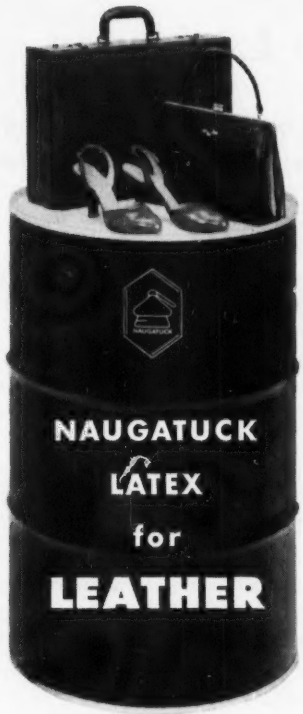

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VIEWPOINT

Speaking Out on Legislation

AN ADMINISTRATIVE HEARING scheduled for Nov. 10 and 11 by the Internal Revenue Service may have a substantial effect on some parts of the chemical process industries. Specifically up for discussion: tax treatment of expenditures to influence legislation and to marshal supporting public opinion.

There is a notable division of opinion on the effect of this rule. Many companies and associations feel that the proposed regulations have little significance. Others see it having broad impact.

Those who see the rules as having little impact use these arguments: Few trade groups and fewer individual companies spend any substantial amounts in directly influencing legislation. Thus, it's a battle for the bigger spenders.

On the other hand, there are many who feel the proposed rule puts a whole new area into dispute. Included here: the U. S. Chamber of Commerce, the National Assn. of Manufacturers and the AFL-CIO, since dues or assessments paid to organizations primarily engaged in influencing legislation could not be treated as normal business expense. Moreover, a company might well find that many types of normal corporate activity would no longer be deductible. Even the value of the time an employee spends preparing material requested for congressional hearings could be involved.

Some observers feel that IRS's decision to issue its proposed regulations resulted from a strong Supreme Court interpretation of current law and regulations. In a case decided in February, the court said it "cannot accept" the argument that previous decisions limit nondeductibility "to direct dealings with legislators, insidious or otherwise. . . . Petitioners' reading of these regulations would make all but the reference to 'lobbying' pure surplusage. We think that the regulations must be construed to mean what they say—that not only lobbying expenses but also sums spent for 'the promotion or defeat of legislation, the exploitation of propaganda, including advertising other than trade advertising' are nondeductible."

With regulation of the chemical process industries increasing—in such specifics as air and water pollution or labeling of hazardous chemicals, as well as through more general business legislation—the ability to speak out on legislation will become more important.

There's another problem here. Many companies in chemical and related fields would be at further disadvantage under such a rule. Look at fertilizer producers who must compete with cooperatives, commercial laboratories who face identical operations of nonprofit research institutes, or any taxpayer who finds tax-exempt societies and associations conducting substantial, obviously commercial operations in competition. Here, what the tax-paying concern spends in preparing and disseminating information on its tax-free competition may well have to come from net profit.

No one can anticipate exactly how the IRS will interpret its regulations. But there's a danger of abridging the right of petition.

H. C. Johnson

Editor-in-Chief

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PHOSPHATES

DISODIUM PHOSPHATE $Na_2HPO_4 \cdot 12H_2O$ Na_2HPO_4	Technical Crystalline	Fibre drums 5-ply paper bags	Manufacturing detergents, boiler compounds; chinaware; in chemical processing and dyestuffs; preparation of enamels; tinning, soldering; tanning, pigments, textiles; silk weighting, dyeing, calico printing, fireproofing agent.
	Technical Anhydrous	Fibre drums 5-ply paper bags	
TRISODIUM PHOSPHATE $Na_3PO_4 \cdot 12H_2O$ Na_3PO_4	Technical Crystalline	Fibre drums 6-ply paper bags	As a detergent; manufacturing household and industrial cleansers; for dishwashing, laundry, boiler and water softening compounds; sugar clarification. Paint remover, metal cleaning, metal working.
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TETRASODIUM PYROPHOSPHATE (Anhydrous) $Na_4P_2O_7$	Powdered Granular	Bags Bulk Drums	Soap and detergents, soap builder, washing compounds, oil drilling muds, dispersing agent, water conditioning, metal cleaner, textile dyeing, textile processing, pulp paper mills, kier boiling of cotton, scouring and processing of wool, de-inking newsprint, tin plating.

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PHOSPHORUS RED (Amorphous) P	Powder, Technical	11 lb. tins (10 tins per case) 100 lb. drums	Yellow label (Inflammable Solid)	Manufacture of matches, pyrotechnics, flares, phosphorus compounds.
PHOSPHORUS PENTASULPHIDE P_2S_5	Powder, Lump. Technical	Steel drums Fibre drums Bulk		Additive for lubricating oils and synthetic organic chemistry.
PHOSPHORUS SESQUISULPHIDE P_4S_3	Powder, Lump. Technical	Steel drums (non-returnable)	Yellow label (Inflammable Solid)	Manufacture of matches, pyrotechnics; synthetic organic chemistry.
FERRO PHOSPHORUS (Iron Phosphide)	24% to 26% Phosphorus Technical	Barrels Bulk-gondola cars		FOUNDRIES: To increase fluidity of iron and steel castings. STEEL: In sheet steel to prevent sticking of sheets in final rolling. WIRE: In wire to give stiffness and better surface for drawing.
SLAG (EXPANDED) Lightweight Aggregate	Classified Granulated	Bulk only		Building blocks. Prestressed Concrete.

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AMMONIUM SILICOFLUORIDE $(NH_4)_2SiF_6$	Technical	Fibre drums	As a laundry sour; in magnesium metal casting; moth proofing compounds; glass etching; electro-plating copper on zinc and iron; fluoridation of water.
MAGNESIUM SILICOFLUORIDE $MgSiF_6 \cdot 6H_2O$	Technical	Fibre drums	Hardening surface of concrete, stucco and brickwork; moth proofing compounds.
POTASSIUM SILICOFLUORIDE K_2SiF_6	Technical	Fibre drums Bags	Flux for removal of magnesium from aluminum metal; as a sand inhibitor in magnesium metal casting, Porcelain enamel frit; synthetic mica.
SODIUM SILICOFLUORIDE Na_2SiF_6	Technical	Fibre drums Bags	Ceramic glazes, opal glass, artificial marble, laundry sour; preservative in glue and leather; aluminum metal refining; fluoridation of water; foam rubber.
ZINC SILICOFLUORIDE $ZnSiF_6 \cdot 6H_2O$	Technical	Fibre drums	Moth proofing agent for textiles; laundry sour; moth proofing compounds.
SILICOFLUORIDE MIXTURES 75% Magnesium 25% Zinc	Technical	Fibre drums	Hardening surface of concrete, stucco and brickwork.
MAGNESIUM-BORON FLUORIDE	Technical	Steel drums 145 lbs.	Metal Flux.

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PRODUCTS	GRADES	PACKING	USES
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	PHOTOGRAPHIC:— Film and paper emulsion types. Lithogel—for photo-gelatin printing	Fibre drums	Photographic films, plates, papers. Photo lithography and photo-gelatin engraving. Collotype printing and silk screen stencils.
	PHARMACEUTICAL:— Pharmagels "A" & "B" Capsule grades & specialty items	Fibre drums	Hard capsules, soft capsules, suppositories, pill coating, emulsions and culture media.
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PRODUCTS	GRADES	PACKING	USES
KEYSTONE® AMMONIUM CARBONATE U.S.P. A sublimed product consisting of $NH_4HCO_3 \cdot NH_2COO \cdot NH_4$	Chips Lump Powdered	Steel drums Fibre drums Kegs 6¼ lb. cans (8 to carton)	Bakeries, pharmaceuticals, smelling salts, malt preparations, special glass and chemical processes.

BONE PRODUCTS

PRODUCTS		GRADES	PACKING	USES
ANIMAL BONE CHARCOAL	A solid amorphous black resulting from the charring of clean cattle bones.	Standard grades from ½" to fine powdered	Bags Barrels	Clarifying cane sugar, glucose and oils; water purifying, decolorizing, deodorizing, and air filtration.
BONE BLACK PIGMENT (COSMIC®) BLACKS	An amorphous black pigment, air floated for extra fineness.	25 standard grades	Barrels Cartons	In paint, varnish, lacquer, artificial leather, plastics, printing ink, blackings, polishes.

SULPHURIC ACID

PRODUCTS	GRADES	PACKING	SHIPPING REGULATIONS	USES
SULPHURIC ACID H_2SO_4	60° Baume 66° Baume 99% H_2SO_4	Tank Cars Tank Trucks	White label	Fertilizers, explosives, leather industry, manufacture of various chemicals, pickling iron and steel, precious metal refining, electroplating, metal cleaning, metallurgy, batteries, rubber reclaiming; textile industry; manufacture of fatty acids.

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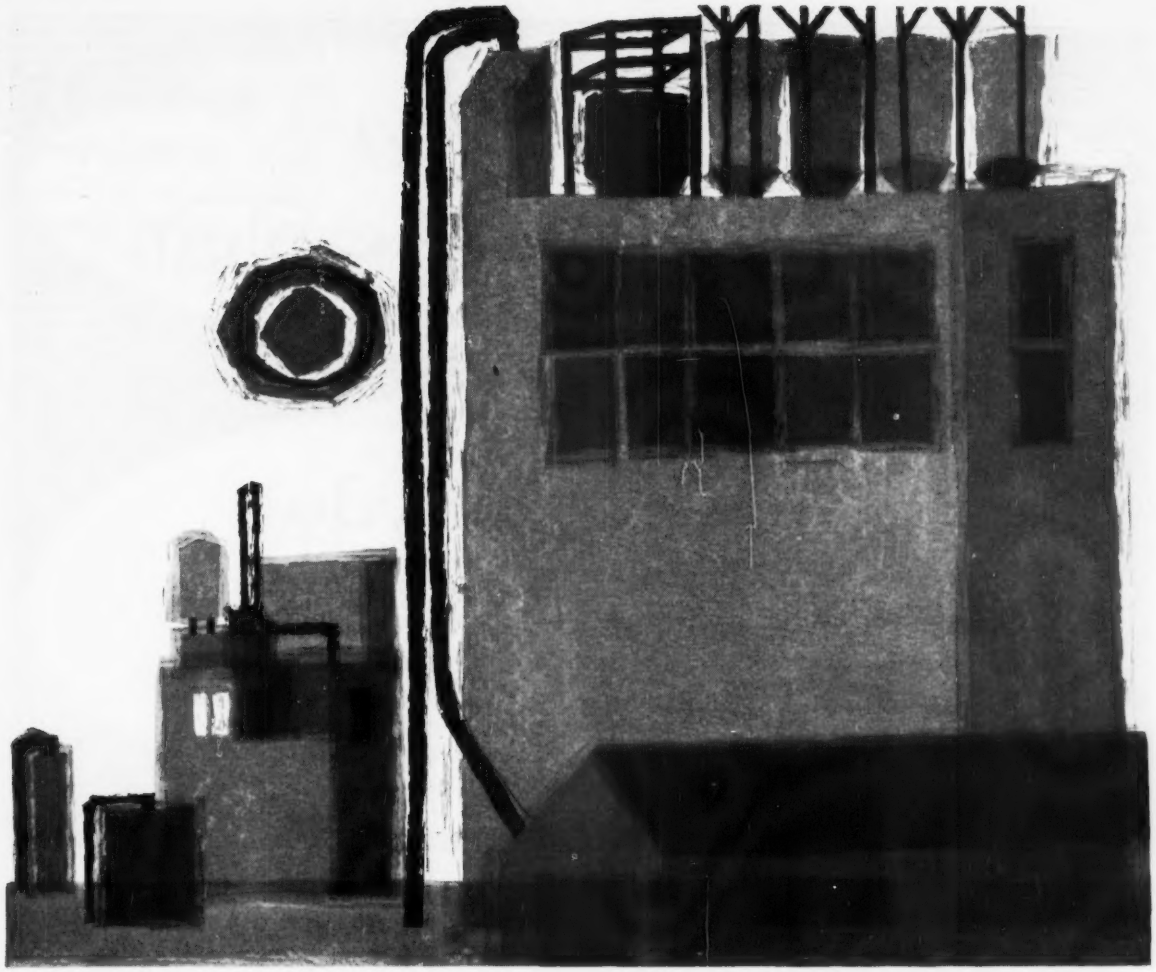

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Kaiser Aluminum building products are surprisingly strong and durable—will never rust, rot or shatter. They are non-sparking. They reflect heat. **And** their look of sculptured distinction sets any site apart for lasting beauty.

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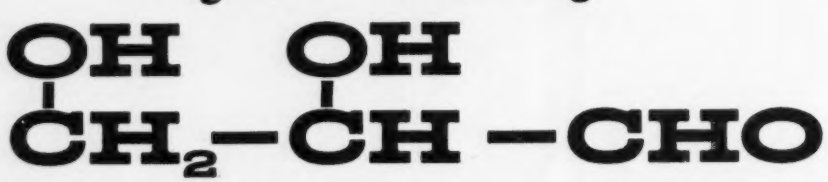
Announcing
Fourth "G" from Acrolein

Glyceraldehyde



Glyceraldehyde is the newest member of the Shell family of "G" derivatives from acrolein which includes glycerol, glutaraldehyde, and glycidaldehyde. Glyceraldehyde, the simplest sugar with one asymmetric carbon atom, provides the functionality and reactivity of hydroxyl and carbonyl groups in one simple molecule.

In most of its reactions, glyceraldehyde exhibits expected diol or aldehyde behavior. It forms the expected carbonyl derivatives with hydroxylamine and hydrazines; with alcohols and mercaptans it forms acetals and thioacetals; alkalis catalyze its condensation to hexose sugars.

Glyceraldehyde reacts through its hydroxyls with acyl chlorides and anhydrides to give esters; it forms dioxolanes with aldehydes and ketones.

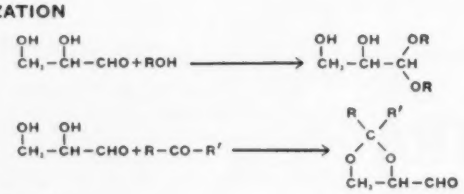
Glyceraldehyde crystallizes from aqueous solution as a dimer—a cyclic hemiacetal which reverts to monomer in aqueous solution. In some instances, its reactions lead to products retaining the basic dimer structure thus providing a source of interesting 1,4-dioxane derivatives.

USES:

Glyceraldehyde, in addition to its use as an intermediate, is suggested for the preparation of polyesters with good adhesive properties; for condensation with phenols, ureas, and sulfonated aromatic compounds for use as adhesives and rubber tackifiers; and for modification of conventional polymer types. It has been employed as a gelatin hardener in photographic applications and also may be useful as a cellulose modifier or cross-linking agent in the treatment of textiles and paper. The ready combination of glyceraldehyde with proteins indicates a possible use for leather tanning and related applications.

DIMERIZATION

ACETALIZATION



ESTERIFICATION

AVAILABILITY:

Research quantities of glyceraldehyde (40% aqueous solution) are available. Your letterhead request will bring you technical information and samples you require. Please send your inquiries for literature and samples to: Shell Development Company, 4560 Horton Street, Emeryville, California.

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Business
Newsletter

CHEMICAL WEEK
November 7, 1959

A record year in sales and earnings, and in dividends, is in prospect—particularly if the steel strike ends this week.

But chemical executives close to the steel industry are warning that even an immediate strike settlement won't propel sales volume steeply upward. They point out that iron ore inventories at most big steel mills are at low levels, and that the Great Lakes shipping season will end this month. They reason that steel output—and related operations—will not be back in full stride until the Great Lakes ore barges resume their runs next April.

That the industry's fourth-quarter outlook is still good is borne out by various companies' actions on dividends during the past week. Allied Chemical increased its quarterly cash dividend 15¢ and proposed a two-for-one stock split; Heyden Newport raised its quarterly dividend 5¢ and declared a 15¢ year-end extra dividend; Rohm & Haas will pay its stockholders a special cash dividend of $1/share and also a 2% stock dividend. Other dividend bonuses: American Enka, a 75¢ year-end extra; Monsanto, a 2% stock dividend; Baxter Laboratories, a two-for-one stock split.

Food Machinery and Chemical, Pennsalt Chemicals and Nopco Chemical are the latest to report record sales and earnings for the past nine months. FMC's chemical sales were up 16%, to 121.1 million, while total corporate nine-month sales rose 10%, to $266.4 million; earnings climbed 35%, to $16.8 million. Pennsalt's nine-month sales of $66.8 million represent a 13% increase, and the $3.8 million, nine-month earnings are 3% more than the company netted in all of '58. Nopco boosted nine-month sales $25.8%, to $27.4 million, and raised earnings 28%, to nearly $1.6 million.

Revisions of nine-month data reported last week (*CW, Oct. 31, p. 22*): Du Pont's sales and operating income—estimated at $1,612.0 million and $229 million—turned out to be $1,611.7 million and 227.1 million, respectively. Hercules Powder's earnings—estimated at $17.8 million—were latter listed at $17.7 million. *CW*'s clerical error put Witco Chemical's earnings at only 3.1% more than last year, instead of 31%.

•

Paint and fertilizer expansion in Central America was a major problem tackled by businessmen last week in San Salvador, El Salvador.

At the "common market" planning meeting, delegates representing the paint industry approved formation of an association to handle the supply of raw materials that will be needed by existing paint plants and the rash of new ones now being built—including projects of Glidden, Fuller, Pentex and Sherwin-Williams.

Controversy raged over where to build a $20-million nitrogenous fertilizer plant, to be financed by an international group. But the delegates

did agree that a single, economic plant should be built to serve the entire Central American market, rather than building several smaller plants.

•

Freeport Sulphur still isn't sure how hard it will be hit by Cuba's new mineral law, which calls for a 25% levy on gross receipts on exported minerals.

Freeport is putting about $119 million into its Moa Bay-Louisiana nickel and cobalt project, including the $75-million refinery at Port Nickel, La. First output is due around the end of the year, is slated to eventually reach 50 million lbs. of nickel and 4.4 million lbs./year of cobalt.

•

It's a twofold expansion for Collier Carbon and Chemical Corp. (Los Angeles) with immediate construction planned for new sulfuric acid facilities and an ammonium sulfate unit near Wilmington, Calif. An 11-acre site has been secured on a long-term lease from Union Oil Co. of California—80% owner of Collier. Capacity of the new facilities was not revealed, but improved processes reportedly will be utilized. Completion is set for late '60.

•

Russia's chemical expansion is racing ahead—the Russians claim—while U.S. output is tapering off because of the steel strike. Soviet planners are talking about reaching their seven-year-plan goals (which include tripling chemical output) in six years—by the end of '64.

In their '60 budget, presented for "approval" last week, they foresee production boosts of 10% for chemicals, 12% for synthetic fibers, 20% for plastics. (U.S. chemical output is expected to rebound and also score a 10% rise next year.) To reach their goals over a six-year period, chemical output will have to rise an average of 50%/year. Most of this increase will come in the later part of the period, when the scheduled new plants come onstream.

•

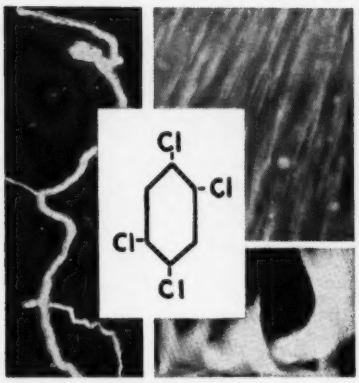
Hooker Chemical Corp. will establish new corporate headquarters in New York City's 666 Fifth Ave. building. The company has leased space for about 20 of its top management, plus the New York district sales office personnel. Central research and engineering departments and Hooker's Eastern Chemical Division, however, will continue to be fully operated at the Niagara Falls headquarters; Durez Plastics Division will remain headquartered in Tonawanda, N. Y., and centralized research will be carried on wholly in the new Hooker Research Center at Grand Island, N. Y. Thomas Moffit, president, said the current size, (sales, $150 million annually) and recent rapid growth of the company, as well as global-scale future plans, accounted for the corporate move.

•

Newly formed Harbison-Carborundum Corp. will operate Carborundum Co.'s (Niagara Falls, N.Y.) recently expanded Monofax plant in Falconer, N.Y. The new firm, a 50-50-owned subsidiary of Harbison-Walker Refractories Co. (Pittsburgh) and Carborundum, will make fused refractories.

BRIEFS

on a new way to look at tetrachlorobenzene... some facts about phosphoric anhydride... a better grade of lauryl chloride... the care and packaging of caustic potash



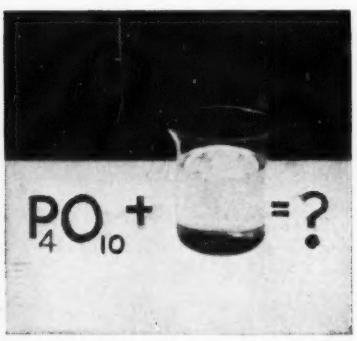
Chlorocarbon-of-all-trades

When you're looking for the stability, the resistance to fire and moisture, or the electrical properties of chlorinated aromatics, take a long look at our 1,2,4,5-tetrachlorobenzene.

Here you have a compound that's 65.7% chlorine, with a molecular weight of 215.9; a compound you can dissolve in most anything but water.

It's easy to handle. A white crystalline solid with very little odor.

It has many more interesting properties, all of them given in the technical data sheet offered in the coupon.



Is phosphoric anhydride more than a thirsty powder?

Stick to the textbooks and you'll write off our phosphoric anhydride P_2O_5 (P_4O_{10}) as just a rather strong desiccant.

Keep an open mind, though, and like many you may find it useful as a highly pure carrier of phosphorus, useful as an intermediate.

A typical analysis shows the Hooker product to be 99.5% pure P_4O_{10}. No trioxide. No chlorine. Barely a trace of iron, lead, and fluorine. 11 ppm arsenic —hardly enough to write home about.

We use a lot of this compound to make our own phosphorus chemicals. We also get calls for it for use in pharmaceuticals, dyes, insecticides, and even as a catalyst. In the light of all this, would you like to send the coupon for a technical data sheet?

Looking for lauryl chloride that's a little bit better?

Would you like to work with a lauryl chloride that's clear and colorless and has a *minimum* of 16% chlorine?

Those are the specs on our special *high grade*. It's an oily liquid with the faintest of odors.

Analysis shows it to be a mixture of n-alkyl chlorides ranging from C_{10} through C_{14}. The C_{12} fraction predominates and accounts for about 80% of the compound.

For many purposes, of course, you'll find our *technical grade* every bit good enough. Its specs read about the same, except that the chlorine content drops to 15.5% and the product has a slight color—up to 2.5 ASTM, to be exact.

For data on both grades, send the coupon.

Caustic potash—custom package at standard price

Expose it to air, and caustic potash soaks up moisture and carbon dioxide until it becomes weak and slow-acting.

To help you avoid this and to protect the inherent purity of our Nialk® caustic potash, we make our own containers to our own carefully controlled specifications.

You can get this pure and well-protected compound in any of seven forms at 90% strength, or in flake and solid at 85%. If you prefer the liquid, we have that, too, in strengths from 45% to 52%.

Check the coupon for full details.

For more information, check here and mail with your name, title, company, and address.

- ☐ Phosphoric Anhydride
- ☐ Lauryl Chloride
- ☐ 1,2,4,5-Tetrachlorobenzene
- ☐ Caustic Potash
- ☐ General Products List Bulletin 100-B

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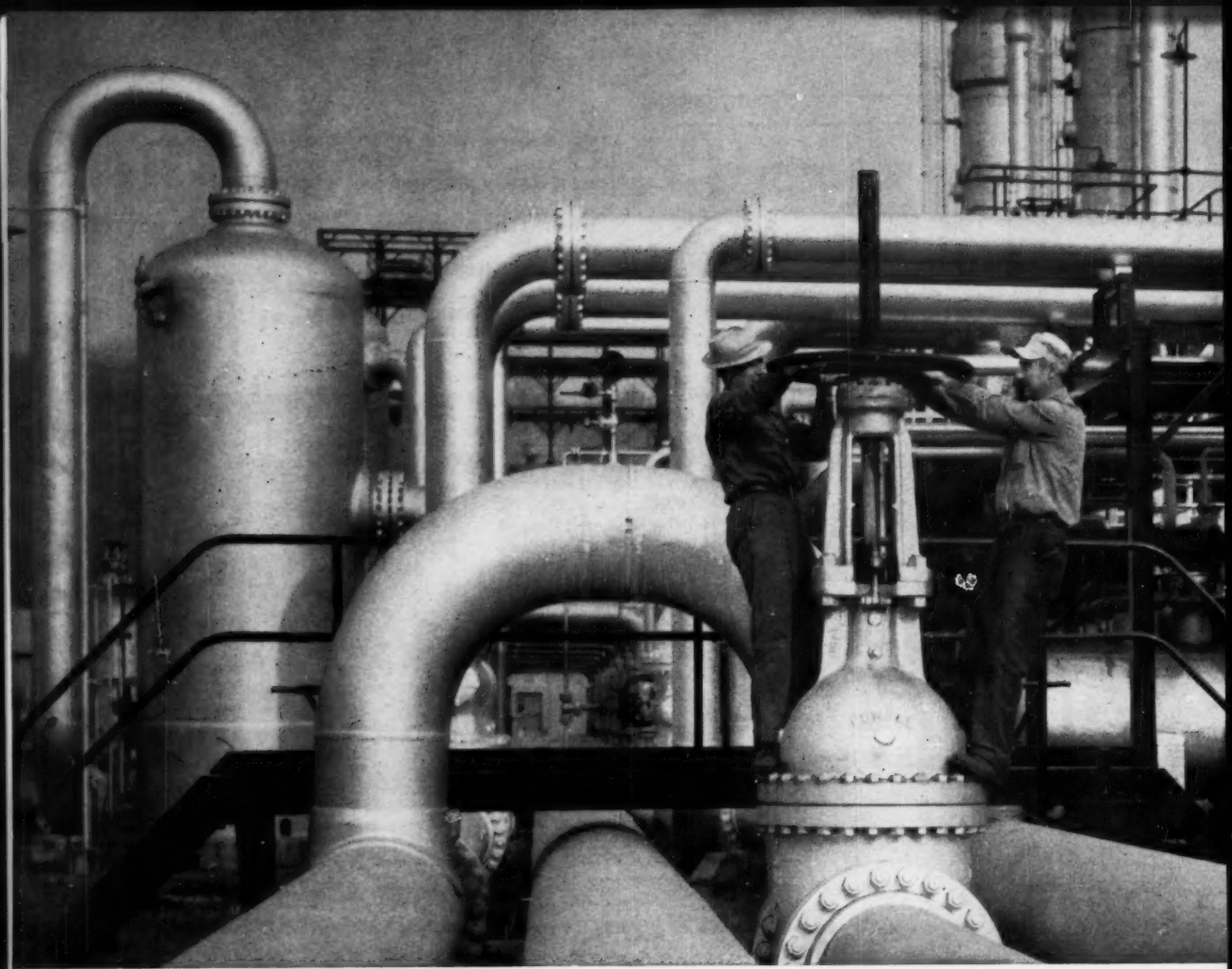

UNION CARBIDE OLEFINS COMPANY

SETS THE PACE FOR TOMORROW'S NEEDS...

This division of Union Carbide Corporation
offers you an economical, dependable
supply of olefins and related products

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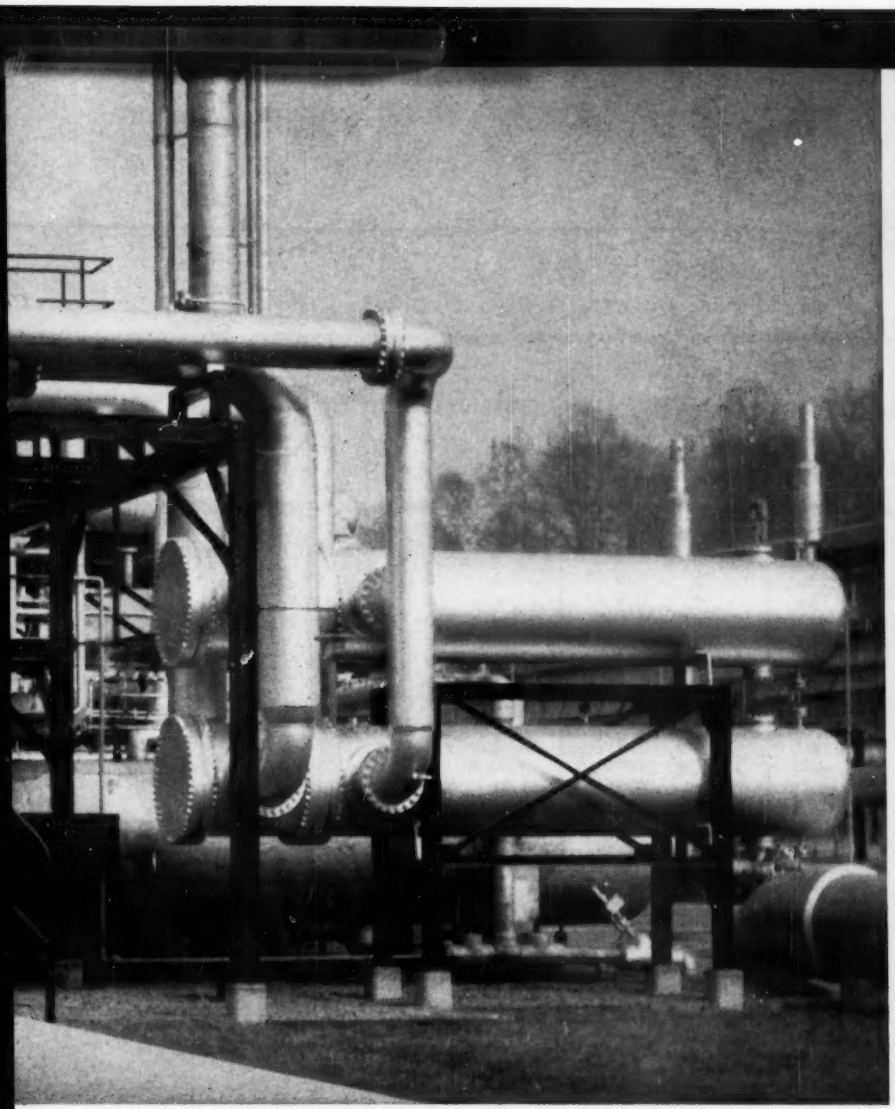

UNION CARBIDE OLEFINS COMPANY

Division of
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Corporation

UNION CARBIDE

Because of the dynamic growth of the demand for olefins, Union Carbide has established Union Carbide Olefins Company. It includes the staff and facilities and offers the same high attention to customer service that have been a Union Carbide tradition for 35 years.

The Olefins Company will continue concentrating on research—new, potentially profitable chemicals for your product development . . . on delivery—prompt, reliable bulk shipments from plants strategically located across the country . . . on volume production—assured supply with strict quality control . . . and on customer service—technically trained representatives devoting their time to your problems.

This strong emphasis on olefins will lead to even more useful products from ethylene, propylene, butadiene, and other petrochemical intermediates. Keep in touch with us for more information. Write Union Carbide Olefins Company, Room 630, 30 E. 42nd St., New York 17, N.Y.

· TETRAHYDRONAPHTHALENE · REFINED NAPHTHALENE · CALCIUM CARBIDE · ACETYLENE · QUICKLIME · CALCIUM HYDROXIDE

POLYPROPYLENE PATENTS OVERSEAS	AUSTRALIA "A"	AUSTRALIA "B"	BELGIUM "A"	BELGIUM "B"	GERMANY (West) "A"	GERMANY (West) "B"	INDIA "A"	INDIA "B"	SOUTH AFRICA "A"	SOUTH AFRICA "B"
U.S. Interests:										
Phillips Petroleum	23	3	23	2	0	0	3	0	7	3
Union Carbide	4	0	0	0	0	0	5	1	2	0
Esso Research and Eng.	2	0	1	0	0	0	0	0	1	0
Goodrich-Gulf Chemicals	0	0	4	0	0	0	0	0	0	0
Hercules Powder	0	0	1	0	0	0	3	0	0	0
Burke, W.	0	0	0	0	0	0	0	0	4	0
Du Pont	0	0	1	1	1	0	0	0	0	0
Western Electric	0	0	0	4	0	0	0	0	0	0
Dow Chemical	0	0	0	3	0	0	0	0	0	0
Standard Oil (Ind.)	0	0	0	0	2	0	1	0	0	0
Other U.S. firms:	—	—	Koppers	Cabot Westinghouse (2)	General Tire	—	—	—	—	—
European Interests:										
Montecatini	2	7	10	7	0	0	3	1	4	2
Farbwerke Hoechst	0	0	6	1	4	3	0	1	0	1
Imperial Chemical Ind.	2	3	4	2	0	1	1	0	3	0
Montecatini and Ziegler, jointly	0	10	5	0	0	0	0	0	0	0
Ruhrchemie AG.	0	0	9	0	3	0	0	0	4	0
Badische Anilin-& S.-F.	0	0	5	0	5	0	0	0	0	0
Ziegler, Karl	0	0	7	0	0	0	0	0	0	0
Rhone-Poulenc	1	0	2	0	0	0	0	0	0	0
Solvay & Cie.	1	0	4	0	0	0	0	0	0	0
Chemische Werke Huels	0	0	0	0	0	4	0	0	0	0
Union Chimique Belge	0	0	4	0	0	0	0	0	0	0
Bataafsche (Royal Dutch)	0	0	3	0	0	0	0	0	0	0
Other European firms:	—	—	Belge du Titane; Hibernia; Solvic S.A. (2); Petrochemicals, Ltd. (2); CNRS (2)	BRPRA Rhodiaceta Verein. Glanzstoff	Titangesellschaft	—	—	BICC (2)	Bakelite Ltd.	—
TOTALS	**35**	**23**	**98**	**26**	**17**	**8**	**16**	**5**	**26**	**6**

Abbreviations: BICC—British Insulated Callender's Cables, Ltd. BRPRA—British Rubber Producers' Research Assn. CNRS—Centre National de Recherche.

In Polypropylene Patent Showdown,

The 278 foreign patents (above) help explain why the U.S. Patent Office is in a quandary this week—sifting overlapping claims in polypropylene from more than twoscore different interests. They also point out the research direction those same interests have been taking.

Turned up in an exhaustive search of the patent literature of eight countries that normally publish patents (or applications) faster than does the U.S., they were all published during the polypropylene patent rush that ended in the fall of last year. Some significant ones have been published since then, notably Phillips' Australian patent application 26,004/57, which claimed "a normally solid crystalline polymer of an olefin having at least three carbon atoms per molecule." But by and large, the list above contains most of the work that—in *CW*'s opinion—will have a bearing on the U.S. Patent Office's ultimate decision.

Seeds of Trouble: It had long been apparent that patent problems were going to develop in the entire polyolefins picture. The first real trouble

OTHER NATIONS*		TOTAL POLYPROPYLENE PATENTS** IN EIGHT NATIONS	
"A"	"B"	"A" Processes, Catalysts, Engineering	"B" Application Research
4	1	60	9
0	0	11	1
1	0	5	0
1	0	5	0
1	0	5	0
0	0	4	0
1	0	3	1
0	0	0	4
0	0	0	3
0	0	3	0
Diamond Alkali	—	3	3
0	0	19	17
0	0	10	6
0	0	10	6
1	0	6	10
0	0	16	0
2	0	12	0
0	0	7	0
3	0	6	0
0	0	5	0
0	0	0	4
0	0	4	0
0	0	3	0
Farbenfab. Bayer	—	12	5
Gelsenberg Benzin			
17	**1**	**209**	**69**

* France (7), Italy (1), United Kingdom (10). ** Issued 1955-58.

Who Holds High Cards?

came when Du Pont received a "composition of matter" patent on linear polyethylene and Phillips promptly challenged it (*CW, July 5, '58, p. 22*).

New storm warnings appeared last month when Ethyl charged that Texas Alkyls and its owners, Hercules Powder and Stauffer Chemical, were infringing on its patented process for making aluminum alkyls (*CW Business Newsletter, Oct. 17*). Status now: the defendant companies have been given more time to prepare their answers, now due late this month.

Both cases promise to involve extensive litigation. Their settlement might well go a long way toward clarifying the patent situation. But in the final analysis, each is only a portion of the whole polyolefin problem. It seems clear that additional, equally complex, cases are developing in regard to polypropylene.

Points of Caution: The 278 patents listed show clearly that a great deal of research effort has been expended in polypropylene. An important point to remember, however, is that the quantity of patents, although helpful as a guide, is no criterion to the size of the research effort.

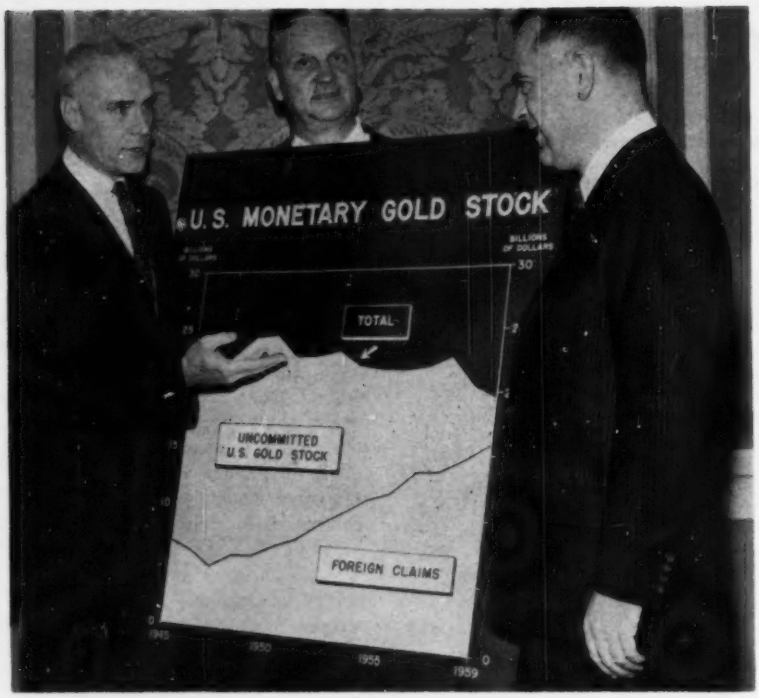
On sheer number, Phillips (with 69) would win, hands down. In its group of patents, Phillips has important ones dealing with the use of its chrome oxide catalyst. However, the bulk of its patents are concerned with engineering considerations—recovery of solvents, transfer of materials, methods of activating the catalyst, removal of monomer.

On the other hand, most of Montecatini's processing patents deal with the more fundamental considerations of the process, such as the type of catalyst suitable. Moreover, 17 of its 36 patents cover applications work on molded objects, films, methods of spinning and other textile matters.

An anomaly in the study is the fact that only five patents showed up for Hercules, the pioneer U.S. polypropylene producer and certainly one of the world leaders in all facets of polypropylene research. That's due at least in part to the corporate attitude toward patenting. Since its interests are largely confined to the U.S., Hercules says it saw little to be gained through patenting overseas. Possible loss would be early publication of know-how.

Another point to bear in mind when adding up patents is that some are essentially duplicates in different countries. For instance, Montecatini's South African Patent 2497/56 on preparing block polymers of alpha-olefins appears to be quite similar to its Belgium Patent 550,093 on the same subject.

What is clearly significant in the study is the wide range of companies that have done work on polyethylene. For instance, Westinghouse and Western Electric both show up with patents on applications that could prove important in polypropylene.



Dow's Lloyd (left), Du Pont's Ellis (center) cite gold reserve drop.

Countering a Trade Squeeze

Industry and government spokesmen drummed away again last week on the need to improve this country's sliding balance-of-payments position (CW, Oct. 31, p. 24).

At the first national conference of the Trade Relations Council (formerly the American Tariff League), the problem was discussed by a four-man panel, including economists Ira Ellis of Du Pont and Lewis Lloyd of Dow Chemical.

Both Ellis and Lloyd stressed that high costs are pushing U.S. prices above competitive levels. Result: less U.S. goods sold abroad, more foreign goods sold here, increasing the U.S. dollar outflow.

"I'm not against the imports," Ellis told the audience. "The problem is that foreigners don't spend their dollars here."

Gold Drain: Meanwhile, the gold drain was uppermost in the minds of the U.S. delegates (headed by Undersecretary of State Douglas Dillon) to the three-week ministers' meeting of the General Agreement on Tariffs and Trade under way in Tokyo last week.

Their prime goals: to force a lowering of barriers against goods from the dollar area, and to free world trade in general while preventing the industrialized nations from being swamped by goods from low-wage areas. There is a growing feeling among high government officials that the answer to the latter problem may be a system of voluntary quotas, policed by GATT.

Two to Diversify

Two newly formed companies will open broad vistas for Courtaulds Ltd.'s American and Canadian operations—but the specific pathways to be traveled are still unknown.

The companies: Courtaulds North America, Inc. (New York), and Courtaulds North America Ltd. (Montreal). They were jointly formed last week by Courtaulds, Ltd. (the British parent company), Courtaulds (Canada) Ltd. and Courtaulds (Alabama) Inc., with the express purpose of diversification outside the fiber and film fields in which the subsidiaries have become major factors.

Chairman of both new companies will be J. Albert Woods, former president of Commercial Solvents. Also at the helm: Stanley Wagdin, as president, chief executive officer and treasurer. He helped organize Courtaulds, Inc., and its subsidiary, Courtaulds (Alabama), in '51.

Seeking Acquisitions: The new companies haven't yet plotted their exact course—but it will be in the chemical field, Wagdin told *CW* last week. First to be undertaken: acquisitions of companies that may become nuclei of future ventures—e.g., Courtaulds' plastic boat and polystyrene resin operations in Canada.

"We may build plants, too," Wagdin told *CW*. But, while the whole objective here is nontextile, he doesn't disparage the growth market foreseen in synthetic fibers. Courtaulds is extremely interested in polypropylene, Wagdin said, and polypropylene fiber is now under production by British Celanese in the U.K.

Stauffer Weds Victor

This week Stauffer Chemical Co. (New York) and Victor Chemical Works (Chicago) consummated the big merger proposed last summer. The outlook for the new company, which will bear the Stauffer name: $230-million sales volume this year, and substantial increases from here on out.

Stockholders of both companies at special meetings approved the merger. Of the 7,247,452 shares of Stauffer common stock outstanding, 6,683,218 shares (92.2%) were voted in favor of the merger; 12,980 (0.2%) against. Of the 1,697,101 shares of Victor common stock outstanding, 1,448,847 shares (85.4%) were voted in favor of the merger; 3,815 (0.2%) against. Of the 57,184 shares of Victor preferred stock outstanding, 49,745 shares (87%) were voted in favor of the merger; none against.

Victor—which brings more than 150 chemical products into the new concern—now will operate as Victor Chemical Division of Stauffer Chemical Co., with Rothe Weigel, Victor's president, continuing as Victor Division president. And it is expected that several directors of Victor will soon be elected to the Stauffer board. Victor stock will be exchanged for Stauffer shares on a one-for-one basis.

New Force in France

The trend toward bigness in the European chemical industry is underscored this week by the first steps in the merger of the two biggest chemical operations in France. Overseas operations will remain intact, at least in the near future.

Saint-Gobain and Pechiney will set up a 50-50 owned company to market their chemical products, including fertilizers and plastics. It will coordinate their chemical research and production programs, set up new operations and plants, progressively take over all the companies' chemical activities in France.

The agreement doesn't affect their nonchemical operations, such as Pechiney's aluminum and Saint-Gobain's glass.

Last year, Saint-Gobain's chemical sales were about $73.6 million—46% of total sales. Pechiney sold $61.9 million worth of chemicals—43% of total sales.

Although the two firms have been competing in some products—particularly polyvinyl chloride—their lines are basically complementary, springing out of their basic interests in aluminum and glass. Pechiney's line largely stems from chlorine derivatives, includes ammonia products, sulfur derivatives, fluorides, copper compounds, bromine, synthetic fibers, plastics. Saint-Gobain has built a large part of its business out of sulfuric acid derivatives, is also big in silicates, sodium hydrosulfide, sodium phosphates, calcium carbide, acetates, polyester resins, maleic and phthalic anhydrides.

In the Works: The big merger has been in the works for a long time. Already, Pechiney and Saint-Gobain are associated in seven joint ventures, weighted heavily in petrochemicals. Behind these first steps and the big move was the need to consolidate the splintered French industry. The need became pressing when the "Common Market" treaty signaled heavier German competition ahead.

Despite these moves, the French chemical industry is still fragmented. The top six companies directly produce only some 20% of total French chemical output. Germany's "Big Three" produce 25% of its chemicals, and Montecatini accounts for half of Italy's chemical production.

	SALES		EARNINGS		PROFIT MARGIN
	9-month total, 1959	*Change from 1958*	*9-month total, 1959*	*Change from 1958*	*9-month average, 1959*
Air Reduction	151.1	17.3%	11.4	17.3%	7.6%
Allied Laboratories	22.8	3.0%	1.6	12.6%	7.1%
Amer. Agric. Chemical[1]	—[2]	—	—0.5	—	—
Atlas Powder	53.3	9.7%	2.8	30.6%	5.3%
Beryllium Corp.	15.6	52.7%	1.1	316.1%	7.3%
Carborundum	84.8	25.2%	4.9	234.3%	5.8%
Celanese	193.4	18.2%	15.8	56.8%	8.2%
Commercial Solvents	51.8	11.0%	2.3	116.1%	4.4%
Cowles Chemical	6.3	13.5%	0.2	97.4%	3.3%
Davee & Raynolds[3]	45.2	13.4%	1.6	121.2%	3.4%
Drackett Co.[4]	—[2]	—	2.3	52.2%	—
Duval Sulphur & Potash	14.1	47.1%	1.8	—14.5%	13.0%
Ferro Corp.	47.4	18.0%	2.6	104.2%	5.5%
Foote Mineral	16.5	—7.2%	1.1	—30.3%	6.8%
Freeport Sulphur	—[2]	—	10.9	20.6%	—
General Aniline & Film	116.2	12.1%	5.3	58.4%	4.5%
Interchemical	93.0	14.6%	4.8	59.3%	5.1%
Koppers Co.	175.4	—11.1%	3.9	5.0%	2.2%
Lithium Corp.	8.3	—2.6%	0.6	0.3%	7.8%
Mallinckrodt Chemical	25.9	4.3%	0.9	58.4%	3.3%
McKesson & Robbins[5]	326.0	10.6%	5.6	26.7%	1.7%
Merck & Co.	166.9	8.5%	23.9	13.4%	14.3%
Metal & Thermit	30.5	18.1%	1.0	91.2%	3.4%
Miles Laboratories	51.4	11.9%	3.5	12.8%	6.9%
Minn. Mining & Mfg.	323.1	19.1%	42.6	44.0%	13.2%
National Lead	396.5	17.0%	39.0	20.2%	9.8%
National Starch & Chemical	39.2	15.7%	2.3	7.6%	5.8%
Pfizer & Co. (Chas.)	185.7	15.8%	17.2	0.1%	9.3%
Pittsburgh Plate Glass	446.2	11.4%	34.1	37.3%	7.6%
Plough, Inc.	25.5	8.5%	2.0	14.3%	7.8%
Procter & Gamble[6]	—[2]	—	29.5	22.8%	—
Purex Corp.[6]	19.7	19.1%	0.8	18.4%	3.8%
Rayonier	96.0	22.6%	9.6	454.8%	10.0%
Rexall Drug & Chemical	163.2	25.3%	6.1	51.4%	3.7%
Schering Corp.	62.9	6.1%	9.3	—0.1%	14.8%
Searle (G. D.)	25.7	2.9%	5.6	2.6%	21.6%
Vick Chemical	35.8	15.8%	6.0	37.1%	16.9%
Victor Chemical	45.2	14.1%	3.8	44.2%	8.3%
Warner-Lambert	138.8	5.6%	11.8	10.4%	8.5%

(1) For first quarter (ended Sept. 27) of company's current fiscal year. (2) Sales figures not reported. (3) Division of Merritt-Chapman & Scott Corp. (4) For fiscal year ended Sept. 30. (5) For six months ended Sept. 30. (6) For three months ended Sept. 30.

Strike Reaction: Variable

Chemical process companies are running into widely varying business changes as industrial production slips because of the steel strike; but the batch of company financial statements out last week confirmed that nearly everyone is being affected to some degree by the third-quarter downturn (CW, Oct. 31, p. 21).

By and large, the third-quarter drop was relatively minor; thus, most CPI companies can point to nine-month sales and earnings that are higher than ever before.

Exceptions on either side of the general trend-line right now are usually traceable to special circumstances unrelated to the steel strike. For example, Beryllium Corp. (Reading, Pa.) is well above the current CPI trend-line (*table, above*) because of growing markets in aviation and nuclear industry materials; sales of two leading producers of lithium compounds are down because their main customer has curtailed buying.

For most producers of heavy chemicals, nine-month profits are up more than sales, relative to last year—e.g., Commercial Solvents (particularly hard hit in the 1957-58 recession) more than doubled net earnings on a sales gain of only 11%.

In pharmaceuticals, nine-month sales and earnings generally are comfortably higher than last year, but several of these companies find profit margins running definitely lower.

COMPANIES

Armour Agricultural Chemical Co. (Atlanta, Ga.) has realigned top management after setting up two major divisions—fertilizer and nitrogen phosphate. The Fertilizer Division covers Armour's 27 U.S. fertilizer plants as well as one in Cuba and one in Puerto Rico. The Nitrogen Division takes over Armour's newly acquired nitrogen plant (Crystal City, Mo.), phosphate mining and processing facilities (Bartow, Fla., and Mount Pleasant, Tenn.), and a triple-superphosphate plant (Bartow). H. V. Miller is new vice-president and general manager of the Fertilizer Division; Robert L. James, vice-president and general manager of the Phosphate Division.

•

Pyron Corp. (Niagara Falls, N.Y.) has purchased a six-acre site for a $1.5-million plant to make hydrogen-reduced iron powder, used extensively in the automotive industry. Its existing plant is in Niagara Falls on property owned by Hooker Chemical Corp.

•

Paul-Lewis Laboratories, Inc. (Milwaukee, Wis.), enzymes producer, has purchased property of Schroeder Lumber & Supply Co. south of its own plant. Price was not disclosed, but the move is expected to spark an expansion of the company's research facilities.

•

P. R. Williams, Inc. (New York), stockholders have approved proposal for merger into Unexcelled Chemical Corp. (New York). Williams manufactures drug and cosmetic specialties. Unexcelled stockholders will vote on the proposal Nov. 10.

EXPANSION

Film: Goodyear Tire & Rubber Co. (Akron) will expand its Vitafilm (vinyl film) production facilities by 50%. It's the second expansion of Goodyear's Films and Flooring Division this year; in June the company revealed a multimillion-dollar program to double vinyl flooring capacity. Target date for completion of the Vitafilm project: early '60.

•

Lube Oils: Humble Oil & Refining Co. plans a new lube oil processing plant as well as major expansion of two existing lube plants at its Baytown, Tex., refinery. The new plant will be a lube hydrofiner. Capacity: 9,500 bbls./day, using a catalytic hydrogen desulfurization. To be expanded: a lube dewaxing plant and lube extraction plant, with completion scheduled for late '60. Costs were not disclosed.

•

Fertilizer: Florida Fertilizer Co. is set to build a $90,000 plant in Wauchula, Fla. Builder: Barbarossa Construction Co.

Gas: Shell will spend $1 million to expand its Sheridan cycling plant near Houston, Tex. Output goal: 130 million cu.ft./day; it's now 110 million cu.ft./day. New facilities also will permit recovery of about 2,000 bbls./day of additional liquid products. Completion: end of '60.

•

Gasoline: Tidewater Oil Co. is building a $1.5-million gasoline plant in the Hollywood Houma Fields area (Terrebonne Parish, Louisiana). The plant (to process 75 million cu.ft./day of separator residue gas) will be a low-temperature absorption type. Liquid recovery is rated at 1,030 bbls./day of propane, butanes and natural gasoline.

•

Sulfuric Acid: Border Chemical Co. (Winnipeg, Can.), has retained Chemical Construction Corp. (New York) to design a 50-tons/day sulfuric acid plant. The unit will use Canadian sulfur, initially, but will later be converted to use sulfur dioxide gas from the roasting of sulfide concentrates from Manitoba Mining and Smelting Co. Ltd.

FOREIGN

Soda/Argentina: A private Argentine-Swiss consortium plans to build a $20-million caustic soda and soda ash plant near Puerto Madryn, in southern Argentina. Initial output, to start in '61, is pegged at 170,000 tons/year of caustic (but no soda ash) and 120,000 tons of "subproducts." Last year, Argentina used 80,000-90,000 tons of caustic soda, produced only 37,000. Soda ash output was 45,000 tons, with requirements estimated at 100,000.

•

Hydrogen Peroxide/Brazil: Companhia Electroquimica de Osasco has put its 5-tons/day hydrogen peroxide (35%) plant onstream at Cotia, near São Paulo. Sodium perborate and other peroxy-compounds will also be produced.

•

Drugs/Argentina: Abbott has started up its $3.25-million pharmaceutical plant at Florencio Varela, Buenos Aires province. Products include Film-Tabs, Embutal, and Pentothal-sodium.

•

Plastics/West Germany: West Germany's plastics output, which rose 15% last year, is expected to increase another 24% this year, to 800,000 tons, valued at $600 million. Output during the first half of this year was 381,000 tons, up 25% from first-half '58. Exports and imports each rose 26%, exports to $77 million, imports to $24 million. Roughly 28% of these exports go to "Common Market" countries, while 36% go to the "Outer Seven" nations in the "Little Free Trade Area."

Washington
Newsletter

CHEMICAL WEEK
November 7, 1959

Washington views the steel strike as a disguised blessing for the business trend. The length of the strike checkreined expansion, which some economists felt was getting out of hand. As a result, it is stretching out the life of the present boom.

Before the strike, predictions of another recession in '61 were plentiful. Now the feeling is that the economy will climb steadily through '60 and go into '61 on the upbeat. With elections coming in the fall of '60, the Administration—and Nixon—will be the beneficiaries.

The Administration issues its first public soundings on the outlook in mid-month at the annual economic conference sponsored by the Agriculture Dept. Here's how it now sizes up to the government's pulse-takers: total output of goods and services this year leveling out at about $480 billion, pushing up to $505 billion or more in '60.

•

Overseas chemical business would be affected by a basic shift in U.S. foreign economic policy. The shift is being pushed by the Cabinet's new strong man, Treasury Secy. Robert Anderson. It reflects the impact of the startling recovery in Europe and Japan and consequent upset of the U.S.'s favorable balance of trade. The U.S. trade deficit last year was $3.4 billion. Anderson's compelling argument is that a continuation of this trend would jeopardize the value of the dollar and threaten its position as the bulwark of the Western world's economy.

Main policy changes in the works are:

- Countries receiving development loan funds would have to buy American goods whenever possible.
- The same may apply to military aid, although the State Dept. resists this.
- An attempt will be made to shift some military expenditures abroad to U.S. allies.
- Washington is pushing other capitals to remove discriminatory restrictions on U.S. goods. More than 30 countries still discriminate against hundreds of types of dollar goods.

Anderson faces strong opposition in getting the policies enacted. Last week, for instance, Sen. William Fulbright, chairman of the Senate Foreign Relations Committee, said that tieing development loan funds to purchase of U.S. goods contradicts long-standing U.S. policy of encouraging competition in international trade and would slow down the growth of underdeveloped countries. It would induce other countries to enact similar protectionist measures. Other officials point out that enforcing buy-American policies would mean at most $500 million worth of business that would otherwise go to Japan or Europe—not enough to risk the retaliations that might set in. But Anderson has the President's ear.

Moreover, some experts claim that if all discriminations against U.S. goods were removed, it would result in only $100 to $150 million worth of purchases here.

•

FDA's list of safe chemical additives exempt from the food additives law is going the round of necessary approvals in the bureau and will be published in about two weeks. It contains about the same number —188—of exempt chemicals as the proposed list published in December but there have been some drop-outs and some additions.

On the new list are the additives generally recognized as safe and therefore not requiring laboratory proof. The opinions of 1,000 scientists were sought in drawing up the final list.

•

Look for a long list of proposed wordings for drug warning labels to be issued by FDA within the next two weeks. Original wordings were submitted for comment several months ago and have now been revised. They are warnings not to take laxatives in case of stomach ache, warnings for children, and the like.

Also in the works for next week: the first standards for ice cream, and new regulations permitting use of saccharine and cyclamate sweeteners in jams and jellies. The ice cream standards were originally proposed just before World War II, have been delayed again and again by technological changes, are just now coming to final form.

•

Products containing vitamin E need no longer bear a label stating that the need for vitamin E has never been established. FDA has determined that the vitamin is necessary to human diet after all. But the agency cautions consumers about wild claims for the vitamin. The daily diet provides more than enough for the average individual, and FDA will prosecute claims that supplementary vitamin E is needed.

•

Ciba Pharmaceutical's new drug for lowering blood pressure, guanethidine, has been successfully tested in two Veterans Administration hospitals. VA says it is potent in stemming high blood pressure, similar to other ganglionic-blocking drugs now in use, but does not produce the undesirable reactions they do. The only ill effect was diarrhea, which was easily controlled, plus dizziness while standing, which results from any lowering of blood pressure. VA doctors say the drug is probably suitable for patients with severe high blood pressure, that does not respond satisfactorily to chlorothiazide.

•

CPI industries accounted for one-fourth of new facilities built along inland waterways during the third quarter of '59, according to American Waterways Operators Inc. Construction of barge facilities so far this year has exceeded that of any year since surveys were started in '52, reflecting increased interest in low-cost water transportation.

The world's most persnickety people will buy -and buy again- your liquid detergent built with Monsanto TKPP

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"Persnickety, that's me. I like things clean – really clean – without spending half my life in the elbow-grease department. And that's why I'm crazy about these new, *really effective* liquid detergents*."

*7 "building" benefits make Monsanto TKPP the one essentia

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TKPP is the only alkaline builder so soluble that your liquid detergent can score *peak*, all-purpose cleaning power —you achieve a high concentration while you get a lower-cost compound.

2

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Monsanto TKPP stays fully active and in solution longest of any alkaline builder you can use in your liquid detergents ...has performance-proof of trouble-free shelf life.

3

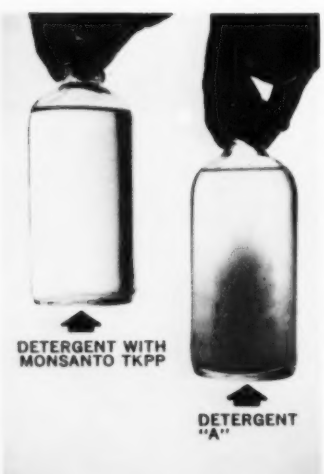
Controls alkalinity for best stability

Through buffering, Monsanto TKPP provides and maintains the optimum pH for best cleaning and solution stability.

4

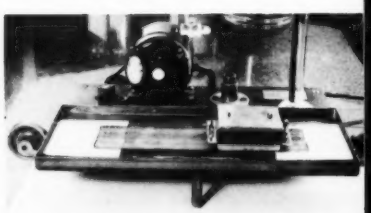
Excellent hard-surface detergency

See how Monsanto TKPP builds heavy-duty scouring action into liquid detergents. Gardner Scrub Test proves effectiveness (below).

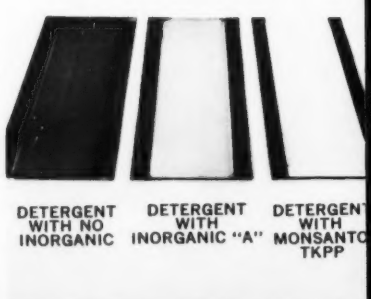


Compare the superior solution clarity of a typical liquid detergent compound built with Monsanto TKPP.

Both samples are unfiltered—have same concentration of TKPP. Formulation available on request.



Vinyl floor tile soiled with a blend of metallic dirt, kerosene, petrolatum, lubricating oil, shortening, and scrubbed 200 strokes according to a standard procedure.



norganic for all *really effective* liquid detergents

5

Multiplies detergency

Through its own detersive ability and synergism with other ingredients, TKPP boosts liquid detergent cleaning power severalfold.

6

Keeps dirt in suspension

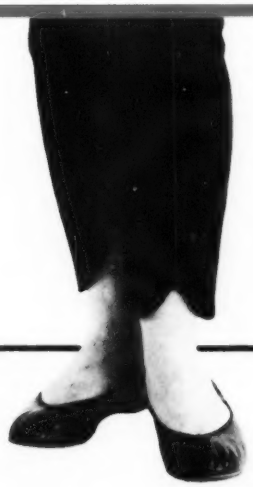
Monsanto TKPP captures soil particles and prevents them from being redeposited on surfaces being cleaned.

7

Reduces "hard-water headaches"

Like Monsanto sodium phosphates, TKPP improves the efficiency of liquid detergents by sequestering the "hardness" and preventing scum formation.

Better performance at low, low cost: this is what Monsanto TKPP can deliver in *all* your medium- and heavy-duty liquid detergents. Consider the seven valuable detergent-building benefits you get with Monsanto TKPP. Small wonder *no* other builder is so essential to liquid cleaner effectiveness and economy.



More liquid detergent is made with Monsanto TKPP than with any other inorganic builder

Monsanto

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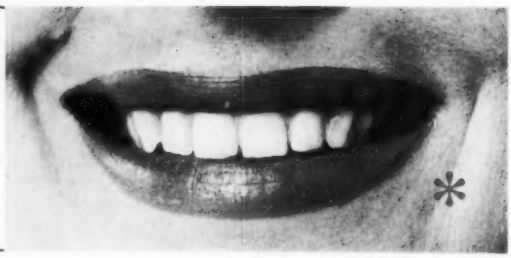

*to boost profits, while making the most persnickety people happy **

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CPI market researchers check the score on government-compiled statistics

Time for a Change in Federal Statistics?

There's a chance the U.S. Budget Bureau may transfer the government's job of reporting synthetic organic chemicals statistics from the Tariff Commission to the Bureau of Census (CW, Oct. 24, pp. 81, 101). The possible shift—viewed with disfavor by many CPI market researchers—is stimulating a general critical look at government statistics.

Why is the Budget Bureau contemplating the switch? It's definitely not because Tariff wants to shuck the job—which it has been doing for some 40 years—or that Census is deliberately and belatedly trying to wrest jurisdiction from Tariff.

The situation simply revolves on a point of law: Tariff has never been properly authorized by the government to do the job. Now, Joseph Talbot, chairman of the Tariff commission, wants proper authorization before he signs over more than $100,000 of his annual budget for the job.

In fact, both agencies are eager to provide the service—each has substantial qualifications. Tariff, for example, feels its decades of reporting on synthetic organics has given it valuable familiarity with these generally complex chemicals, and their nomenclature, relative importance and over-all relationships. The implication: reporting organic chemicals statistics is a more complex job than compiling data on most other commodities—including inorganic chemicals.

The Census Bureau believes, of course, it is capable of handling the organic chemicals problem. It's primarily a statistical job, spokesmen argue, and that's the function for which the Bureau of Census was organized in the first place. The argument that Tariff needs the data on organics as background for tariff laws also is discounted by Census —Census has its own departments specializing in import-export problems.

Spot-checks by *CW* of CPI market researchers discloses that the majority of these statistics users favor retention of Tariff as the organics reporting agency. Main fear: a transfer to Census would probably mean that the amount of information reported would be significantly cut back.

Plenty of Meat: Despite occasional gripes that Tariff gets off the beam on some statistics (a criticism that no statistical organization can escape completely) and that too many items are lumped together in "basket" categories, it's generally conceded that Tariff does pack a lot of meat into its statistical cans.

The Budget Bureau reportedly is wondering if the big organic data package of the Tariff Commission amounts to a special information subsidy for that specialized segment of the chemical industry. Favored counterargument is that upgrading

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other chemical statistics—not shaving of organic ones—is the proper approach to balancing of industry coverage. This, of course, leads to knotty economic problems: How much money should be spent? Who should foot the bill?

Cutbacks Inevitable? Would transfer of organic chemicals reporting to Census necessarily mean a reduction in the amount of data compiled? Census spokesmen assure that no changes would be made "until Census has time to see how well the information supplied balances with reports on other areas." This qualification obviously saves Census from any final commitment.

Despite these assurances, one part of the reporting job now done by Tariff would almost certainly fall by the wayside. That's the listing of firms producing each chemical covered by Tariff. Census interprets the "disclosure clause" (which prohibits a federal agency from revealing, through its data, specific sales/production information about individual producers) to include listing of firms that make any particular commodity. Census spokesmen say the law would force elimination of this listing "unless each producer gave the agency permission to list its name."

The virtual certainty that producer listings would be crossed out by Census is one important argument against pulling the job from Tariff—which obviously interprets the disclosure clause differently than does Census.

Secrecy Brews Espionage? Those CPI market researchers who favor more comprehensive statistical reporting by the government point up a possible side effect of any information cutbacks.

Less data, they argue, would mean more industry espionage. If certain information—vital to a company's firming of its position in highly competitive business—were lacking in public sources, most firms would try to ferret out the data on their own hook. Much "secret" data is, of course, obtained through "ethical channels"—e.g., information-trading by market researchers and company executives.

But as recently documented by C. I. Associates (a group at the graduate school of business administration, Harvard University), U.S. businessmen sometimes resort to tactics such as plant infiltration, wiretapping, use of "private eyes."*

A more recent study that throws a spotlight on wiretapping by business firms—called "The Eavesdroppers"—was published by Rutgers University last week. The study was made under a grant from Fund for the Republic, Inc.

How Valuable? How much competitive information does the U.S. businessman actually derive from government publications? The CIA survey says that 75% of all firms contacted reported they do not "normally" obtain competitive information from the government. There is, however, no indication if that proportion holds in the CPI alone.

Incidentally, most frequently stated criticism of government, according to CIA, is that information is usually old. The surveyors also concluded that government publications are generally considered the third most productive source of published intelligence—business publications were rated best, company annual reports second.

Tiptoeing Through Europe: Although unethical methods of fact-gathering by individual firms are decried by most CPI market researchers, some individuals advocate competitive snooping—by the U.S. government—in foreign countries.

One CPI consultant labels the U.S. government's business reporting as "too long hair," bemoans the lack of down-to-earth information about activities of foreign producers who compete in world markets.

It's time, he said bluntly, for the U.S. government to "stop pussyfooting around and become as tough as other governments." The U.S. businessman, he explains, should be told a great deal more about business policies and tactics of foreign producers, about cartelization,† and about foreign government subsidies of exports to countries where the products compete with U.S.-made products.

General import-export statistics have repeatedly come under critical fire; a common plaint is "incompleteness or meaningless" data. Many chemical

*The report: "Competitive Intelligence—information, espionage, decision making." Available from C.I. Associates, Watertown, Mass., for $10.

†A few days ago, the United Nations Economic Commission for Europe warned that international cartelization could nullify the tariff-cutting objective of the European "Common Market." Cartelization was described as widespread; although more stringent curbs are being legislated, implementation of the curbs is reportedly lagging far behind.

MILLIMICRON HEADQUARTERS is an apt name for Columbian Carbon's new research center in Princeton, N. J. Because it is devoted to the study of carbon black particles so tiny they must be measured in millimicrons . . . particles that play vital roles in the manufacture of rubber, paint, ink and plastic products.

Finding new frontiers for the use of carbon black . . . new ways in which it can contribute more effectively and efficiently . . . is an unending project that has earned Columbian credit for many "firsts"—the development of new types of carbon blacks . . . the use of electron microscopy to reveal new concepts of carbon black structure . . . data on pH effects . . . and most recently Columbian's Black Rubber process.

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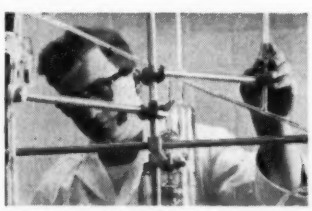
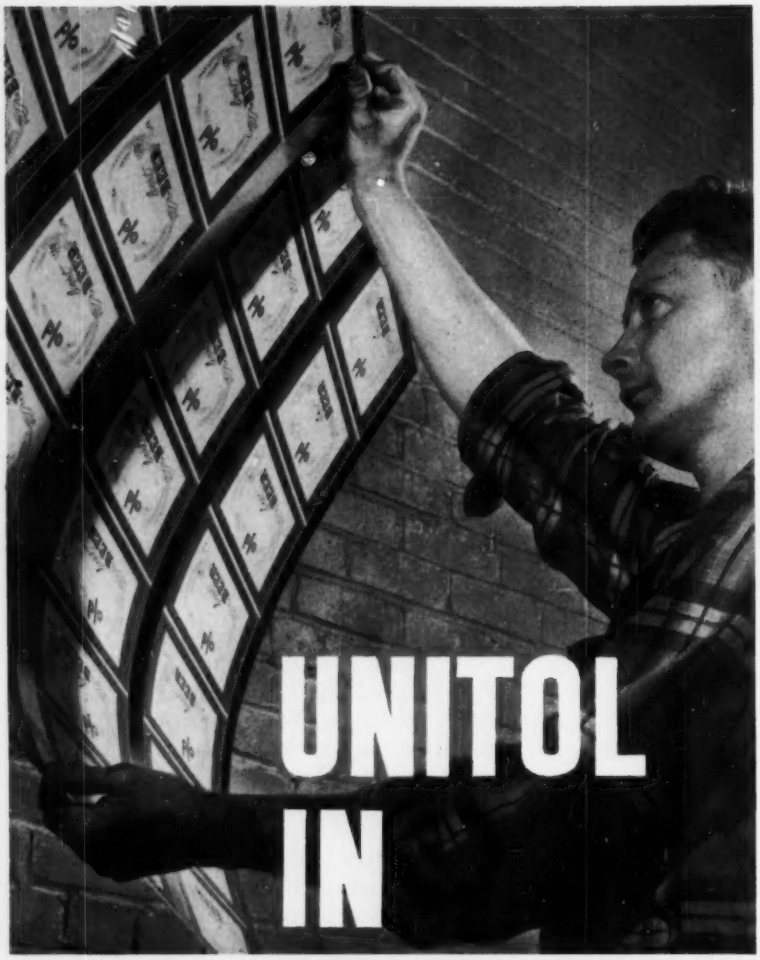


TOMORROW . . . much of Columbian's research is devoted to breaking barriers . . . turning the impossible into reality.

PEOPLE . . . An outstanding research staff whose accomplishments are well known . . . will direct laboratory activities.



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imports, for example, are simply lumped into one category labeled "chemicals."

But this statistical area is brightening—at least, that was assured by Edward Ely, chief of the Census Bureau's Foreign Trade Division, recently at a meeting of the Synthetic Organic Chemical Manufacturers Assn. (SOCMA) in New York. One step out of the foreign-trade statistical muddle will be the use—effective Jan. '60—of a revised questionnaire system that will result in reports titled "U.S. Import Duties Annotated for Statistical Purposes." Briefly, one coordinated questionnaire will handle all information previously obtained through two separate, far more complicated, questionnaires.

Speed and Accuracy: Accuracy of government statistics—despite sporadic carping by some users—is generally endorsed by CPI spokesmen. Admittedly, there's always room for improvement; but it's also pointed out that most statistics users don't really need down-to-the-pound accuracy, are actually looking only for realistic orders of magnitude.

It's also conceded by CPI observers that not all obvious inaccuracies in government reports can be blamed on the agencies themselves; lackadaisical reporting by some firms—not entirely sold on value of statistics—contributes to inaccuracies.

In fact, one CPI expert—well acquainted with federal statistics through his long-time advisory service to federal agencies—blames form-inundated comptrollers. He says they don't like to take the time to provide the detail of information requested by government agencies, delay reporting, often expend only minimum effort to check data reported.

Errors in government statistics can also result from less-than-100% coverage—either because some report late or inadequately, or because some produce a particular product without the federal agency's knowledge.

Legal pressure could be brought to bear on reticent producers by the federal agency seeking answers. But it's unlikely that such action would be initiated—agencies commonly resort to more gentle pressure of reminder letters, telegrams and finally telephone calls.

Answers to the other problem—production unknown to federal agen-

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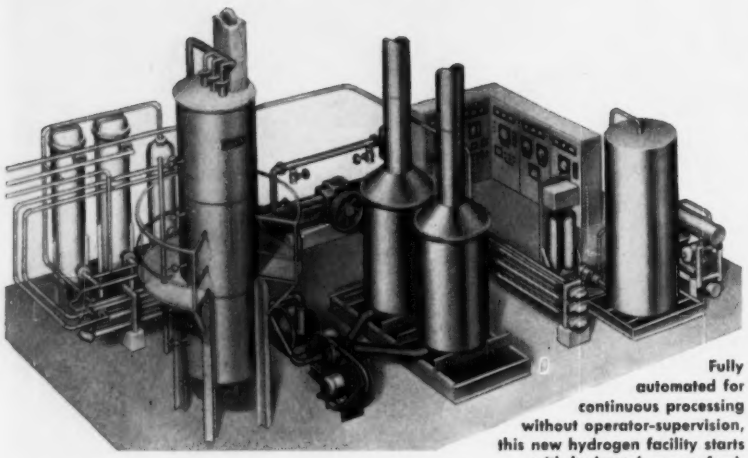

Fully automated for continuous processing without operator-supervision, this new hydrogen facility starts with hydrocarbon gas feed.

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To determine what *your* operating costs would be for equivalent purity, refer to the following table, which lists utilities requirements per 100 SCF of hydrogen produced:

UTILITY	AMOUNT	YOUR RATE	YOUR COST
Natural Gas	80 SCFH	.....	.....
Steam	16 lb/hr	.....	.....
Water (cooling)	270 gph	.....	.....
Power	1.4 KWH	.....	.....

YOUR TOTAL OPERATING COST PER 100 SCF_____

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cies—is best solved by CPI being its own watchdog, say federal spokesmen. But admittedly not all firms would feel constrained to inform on others; moreover, some who have, complain that such exposure doesn't always bring the absent producer into the statistical listing.

What Can CPI Do? What else—besides reporting on laggard producers—can the CPI as a whole do to encourage improvements in government statistics?

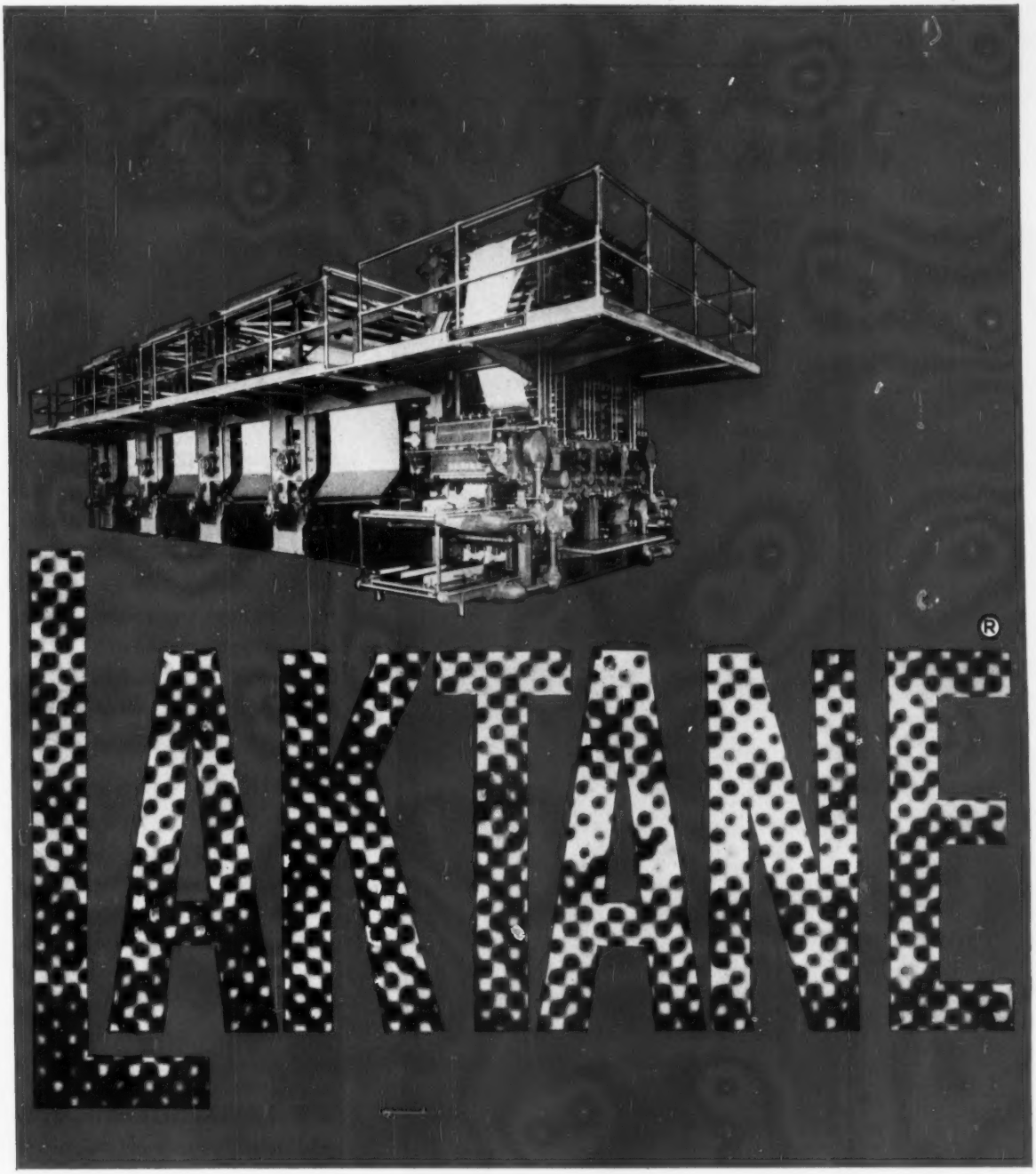
Right now, there is heartening indication of a new awareness of the federal statistics problem. For example, the Federal Statistics Users Conference (membership includes any and all organizations that use federal statistics) comes up with many industry-oriented proposals.

One of that group's current projects—just barely getting off the ground—is a proposal to provide a truly comprehensive index to all federal statistics; all reference sources on a particular commodity would be listed in one place. It would be a welcome addition to the statistical tools of every market researcher.

Only stumbling block to development of the index—and it could be a fatal one—is finding a way to foot the bill, variously estimated at $50,000-100,000.

There's a chance, too, that the Chemical Market Research Assn. will embark on a project—through questionnaires—to probe the chemical statistics problem. (In fact, *CW* recently suggested editorially that both CMRA and MCA might well consider making such studies—*Viewpoint, Oct. 24.*) CMRA action must await approval of the membership—which may come during next week's meeting in Chicago.

In any case, now is clearly the time for some detailed investigation of the over-all statistical situation. Market research—which feeds on statistics—has now matured into a vital management tool in most progressive CPI firms; fast-mounting global competition is forcing producers into still broader searches for more accurate information. Federal agencies, aware of industry's mounting interest in their activities and spurred by emergence of electronic statistical techniques, are highly receptive to constructive suggestions from industry sources. Now, it's up to industry to do its part.



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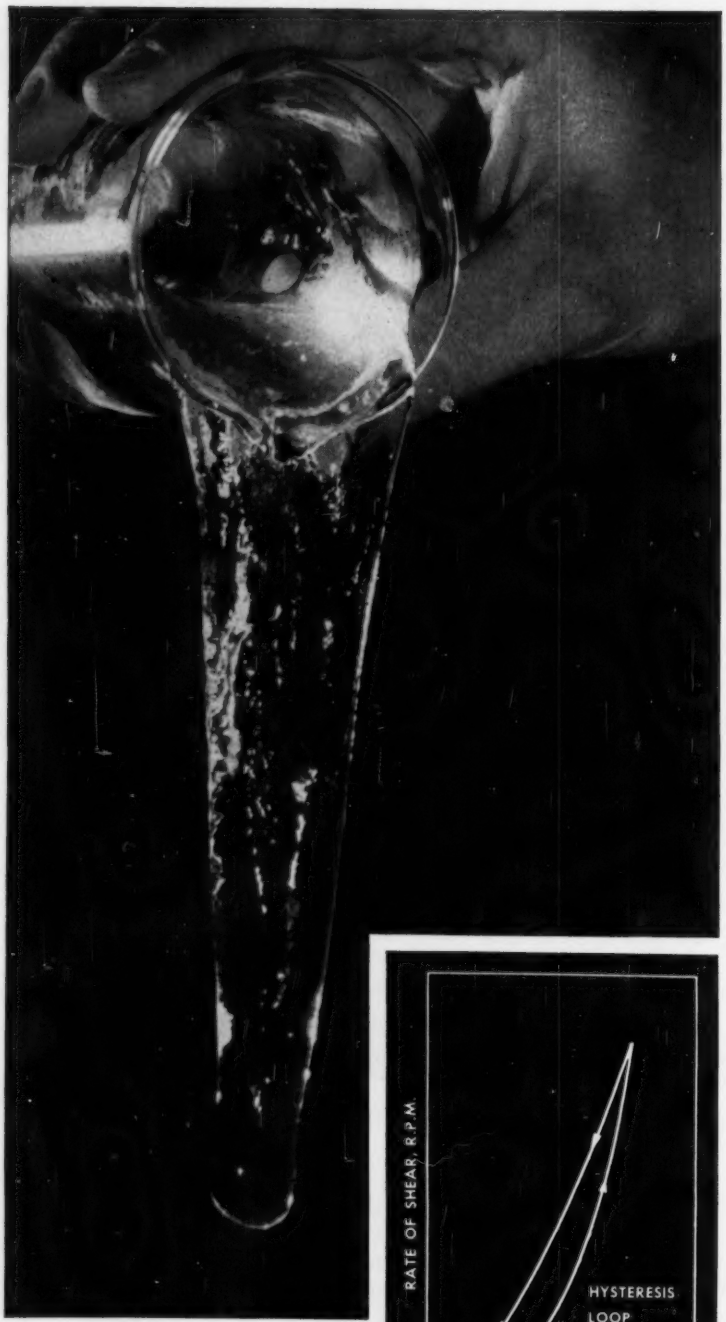
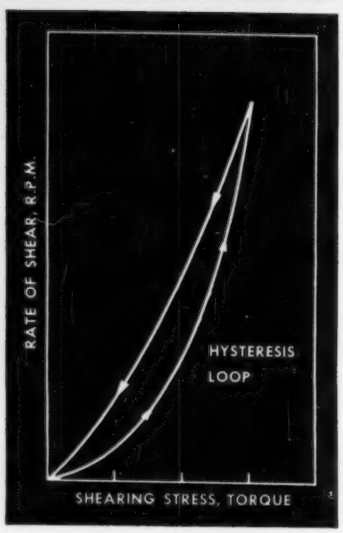
The CMC Story

THE WIDEST RANGE





FROM ONE EXTREME...
This unretouched photo shows a thixotropic solution of CMC being poured. Rheogram traces characteristics of a thixotropic CMC-7H solution.

Hercules Has the

Starting with a laboratory curiosity —crude and nonuniform—a Hercules research and production team years ago developed the first commercial purified CMC — cellulose gum. Uniform and stable in price, cellulose gum immediately proved far superior to natural gums in a wide range of uses, and as a result has been in ever-increasing demand.

THIXOTROPIC—The first CMC to be made was a thixotropic material. A picture and graph of its solution characteristics are shown on the left. This property is important in many applications; for example, because it thickens on standing, it's ideal for suspending solids in calamine lotion, or pigments in water-based paints.

NOW NONTHIXOTROPIC, TOO —Advanced research and techniques have made it possible for Hercules to also supply nonthixotropic CMC

HERCULES

of CMC's on the market

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(solution properties and rheogram on right). This material yields a smooth, free-flowing solution which does not thicken on storage—important in such applications as cake icings and dietetic beverages.

FULL RANGE—Variations in rheological properties available in Hercules® CMC's provide just one example of the versatility of this water-soluble gum. If, however, you require a variation in viscosity, degree of substitution, particle size, or solubility, we have a grade of CMC to suit your needs.

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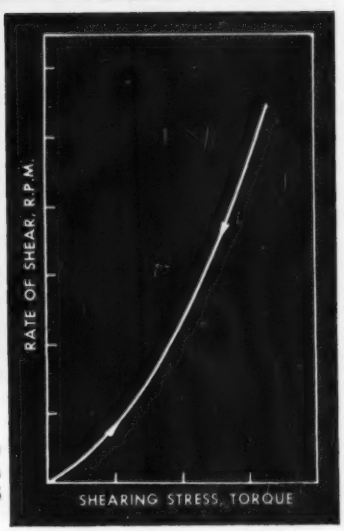
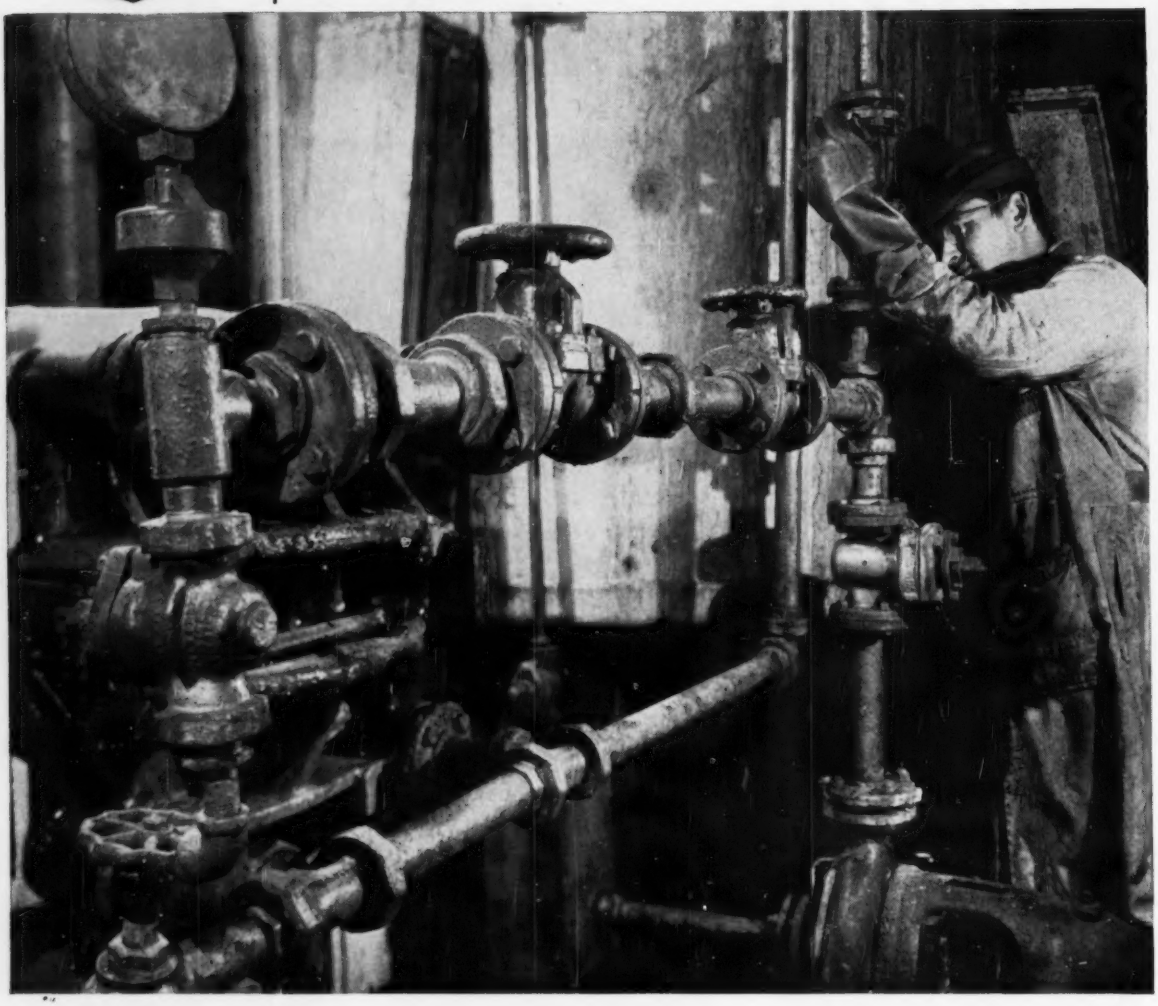


...TO THE OTHER
Nonthixotropic CMC solution pours like water. Rheogram illustrates characteristics of a nonthixotropic pseudoplastic CMC-7HS solution.

DOW | **SARAN LINED PIPE**



After eight years carrying lithium chloride brine . . .

no corrosion in SARAN Lined Pipe

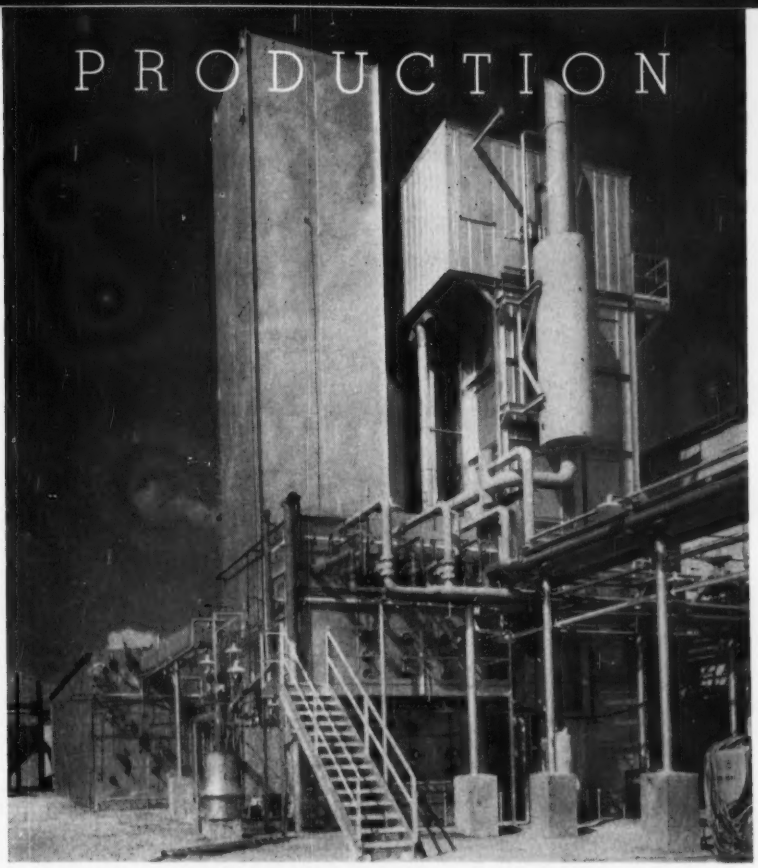
When pipe must carry extremely corrosive lithium chloride brine . . . when floor-level installation freely exposes it to danger of accidental damage from trucks and tools . . . doubly protective SARAN Lined Pipe can mean dependable, low-maintenance operation for many years.

Lithium Corporation of America's Minneapolis, Minnesota, plant produces pure lithium metal as well as various lithium salts. In the production of lithium chloride, SARAN Lined Pipe is used to carry LiCl brine to drying equipment for the removal of water. This brine is extremely corrosive and will quickly eat through steel pipe should a crack develop in the lining. Other SARAN Lined Pipe carries suspensions of lithium fluoride and hydrofluoric acid, a combination which will attack and destroy even glass. Because of its strength and extreme corrosion resistance, there's never been a failure in the SARAN Lined Pipe.

SARAN Lined Pipe at this plant is installed close to floor level in some working areas, constantly exposed to the danger of accidental damage from trucks and tools. Lithium's engineers stated, "SARAN Lined Pipe provides protection from outside damage and from corrosion by the solutions carried. In eight years of pumping LiCl brine through SARAN Lined Pipe at 30 to 50 psi, there's never been a breakdown, and very little maintenance was required."

SARAN Lined Pipe, fittings, valves and pumps are available for systems operating from vacuum to 300 psi, from below zero to 200° F. They can be cut, fitted and modified easily in the field, without special equipment. For more information, write Saran Lined Pipe Company, 2415 Burdette Avenue, Ferndale, Michigan, Dept. 2281AM11-7.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN



For small companies, an oxygen plant (photo, right) is a big investment. To assure the most for their money, operators pool know-how.

Target: Bigger Payoff from Gas Plants

Next weekend, representatives of 66 companies will travel to Miami Beach, Fla., for one of the most unusual information exchanges in the chemical process industries. Rugged competitors if their paths cross during the business day, they take time out at least twice a year to discuss new techniques and common operating problems that could make each company an even tougher competitor.

The companies are all members of Independent Oxygen Manufacturers' Assn. (IOMA), a group of small producers of oxygen, acetylene, nitrogen and other industrial gases. The way in which they help broaden each other's plants and business knowledge would be of signal interest to small companies in other CPI areas.

Most small companies, even when they have top-notch plant and engineering staffs, haven't the quantity of technical resources available to larger companies for keeping up with and evaluating new developments in their field. IOMA has overcome this disadvantage by pooling the technical resources of the small companies producing industrial gases. And, it has overcome the natural inclination of companies to keep to themselves knowledge they think might give them a competitive edge.

Easy Start: IOMA was formed about 10 years ago by a few small oxygen producers. Cooperation was easier at the start. The members were in different sections of the country. They were far enough apart not to be directly competitive. But they were competing with the giants of the industry and needed all the information they could get on technical and plant-operating subjects, and competition.

In the last five years, as the membership has grown and some of the members have also grown, IOMA's problems have multiplied. Members are now located in all 50 states and in Puerto Rico, Canada, Mexico—and soon probably in Australia. Several are now located in the same market areas. Some of the firms, such as Air Products, were small when they joined IOMA, are now rapidly becoming larger companies.

But IOMA is still performing its original function, because the founders wisely set it up on the basis of 100% cooperation between members, says IOMA Secretary Walter Keenan, a relative newcomer to the group. IOMA has never let competition become a factor in the dispensing of information, adds Air Products' George Pool, an IOMA director.

Cy Rickel, one of the group's founders, says that his company, Big Three Welding Supply, has no technical information that can't be passed on to other members. He cites the use of 9% nickel steel for storage tanks as a case in point.

When Lukens Steel decided to produce the material, dubbed Nine-Nickel, on a commercial basis last year, Big Three was the first firm to buy it, have it fabricated into storage spheres for low-temperature service. The development and evaluation program was completed, then Rickel, C. S. Adams (a consultant to Big Three) and Joe Proctor of Lukens Steel presented details at the last IOMA meeting.

The trio explained how the 35-

Elliott C-W SEALEDPOWER Motors now available up to 300 hp, in totally-enclosed, fan-cooled and explosion-proof designs

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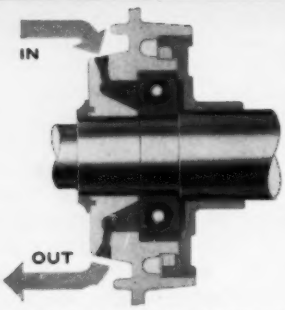

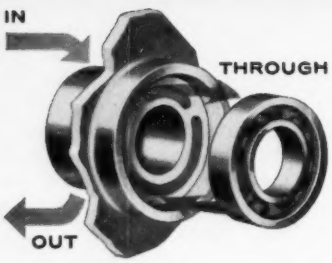

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The drawings show how fresh lubricant, forced through bearings with motor running, positively flushes out old grease. Requires infrequent attention. Advance design prevents over-lubrication and protects against entrance of moisture.

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W 9-4

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PRODUCTION

40¢/lb. steel could be substituted for $1.25-1.50/lb. stainless steel. They pointed out that the most economical method of construction was the joining of two hemispherical heads by one weld, rather than welding a number of segments.

Design drawings, costs, locations of fabricators with proper hemispherical die sizes and qualified welders were furnished, making it possible for IOMA members to conveniently obtain the storage vessels at less than one-half the cost of those made from stainless steel.

No Fixing: The twice-a-year meetings are also devoted to business topics such as accounting procedures, distribution costs, prices and sales. But IOMA is able to steer clear of legal difficulties; officials emphasize that they never make attempts to set prices nor enter into collusion on any business practices.

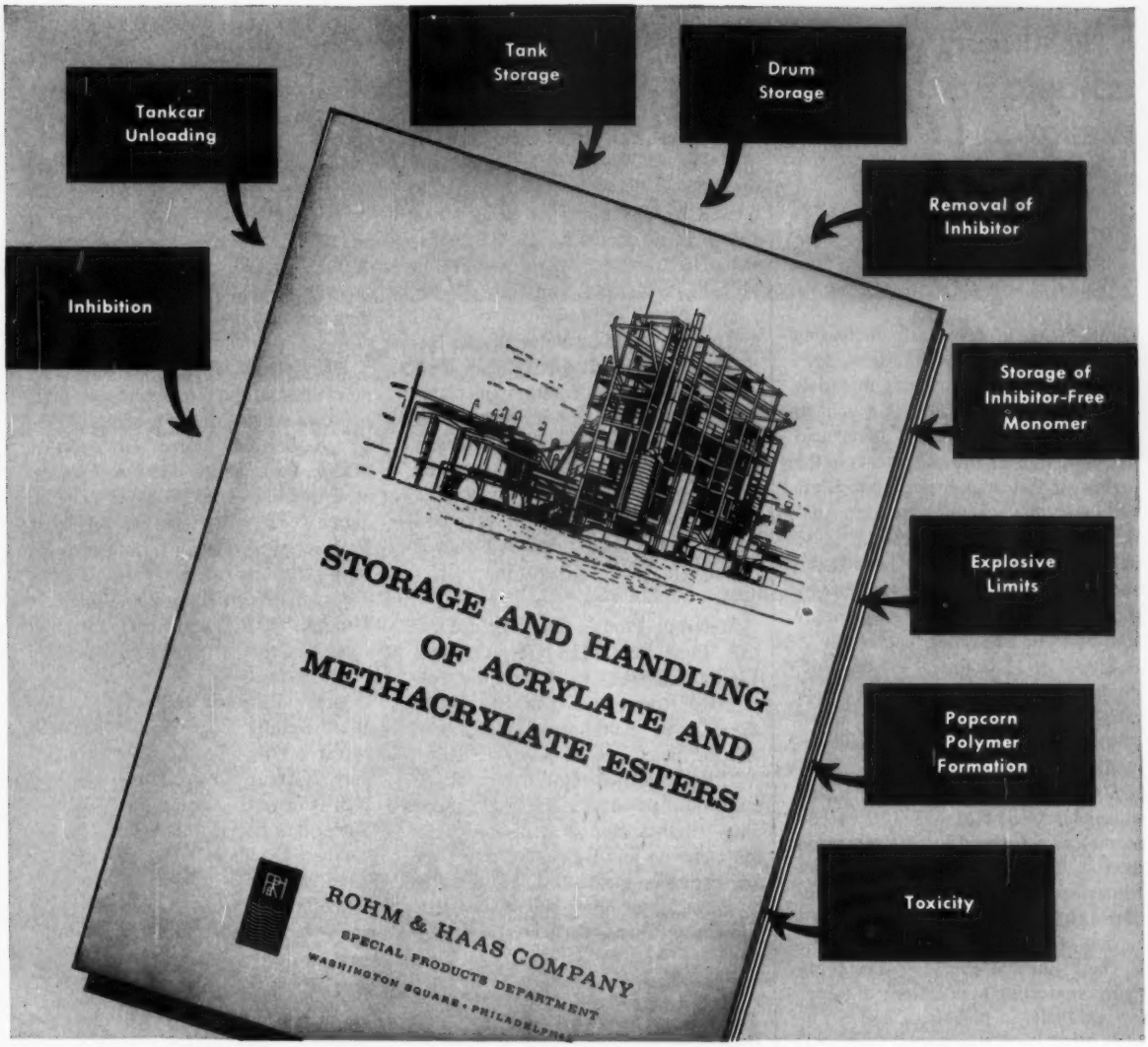
While there are frequently outsiders at the meetings, they are there as guests and consultants. As Rickel puts it, the meetings are private and they want no equipment and supplies vendors to attend.

The subject of equipment is usually taken up when a member firm has a performance evaluation to report. Preliminary reports are often given in a monthly newsletter published by IOMA.

Whenever there is any need for discussion of practical plant problems (e.g., methods of analysis of impurities in gases; operation of driers and filters, liquid pumps and vaporizers), special foremen's conventions are called. These meetings follow the workshop format, emphasize discussion from the floor.

Members' dues pay for the meetings and the newsletter. Special assessments are sometimes made for projects, such as the development of acetylene processes from natural gas at the University of Texas.

IOMA members have a definite advantage over most other small CPI companies, of course. They are all producing the same products, are operating plants of similar design and construction. And, on this basis, trade secrets may not carry the same importance as for other small CPI companies. But IOMA members' imaginative approach to adding to technical know-how may be worth exploring by others.



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(Advertisement)

Unusual dibasic acid spurs research in

- polymers
- polyesters
- epoxy, alkyd resins

Dimer acid, in constantly increasing production by Emery Industries, Inc., is one of the most intriguing materials to come out of the fatty acid field in quite some time. Already, dimer acid has inspired over 160 use patents in the realms of resins, polymers, polyesters and other chemical intermediates. And, according to industry experts, these achievements just barely scratch the surface of the potential represented by dimer's unique structure, surprisingly low cost and ready availability.

Empol 1022 is Emery's "standard" mixture of dimer and trimer acid, approximately 3 to 1 respectively. Other proportions are available on a development basis.

Dimer acid is a *liquid*—with a high molecular weight of 578 (36 carbon atoms) as compared to other common dibasic acids. As the name indicates, trimer acid is tribasic and has a molecular weight of approximately 850 (54 carbon atoms), yet it too is a liquid.

These unusual characteristics bring many interesting applications to mind. For example, in polyesters, epoxy finishes, urethanes, elastomers, foams, alkyds and related products, the ability of dibasic acids to form polymers is of prime importance. In combination with alcohols and polyols, dimer acid produces interesting esters that may find use as plasticizers and hydraulic fluid additives. And, because dimer acid will react much the same as monobasic acids such as oleic and stearic, dimer acid also enlarges the possibilities for unique soaps, metallic soaps and condensation products.

In addition to all this creative potential of Empol 1022, its tankcar price of 26c offers strong commercial inducements in comparison with other relatively expensive dibasic acids.

Emery Industries will gladly furnish samples on request. And, for additional information, you can write for the Emeryfacts titled "Empol 1022" and Technical Bulletin #412 containing abstracts of use patents. Write Emery Industries, Dept. I-11, Carew Tower, Cincinnati 2, Ohio.

PRODUCTION EQUIPMENT

Vacuum Valves: A new line of diaphragm-operated vacuum valves for high-flow, positive-sealing service is offered by The Sinclair-Collins Valve Co. (454 Morgan Ave., Akron 11, O.). The valves are said to hold a vacuum to within 0.5-in. Hg.

•

Thermocouple-Insulator Beads: National Beryllia Corp. (North Bergen, N.J.) offers ceramic insulator beads for flexible thermocouples for ultrahigh temperature and nuclear operations. The beads, of specially processed beryllium oxide, have a melting point of 4650 F. Standard length of the beads: 1½ in.; outside diameters: 0.055 to 0.240 in.

•

Metering Pumps: Associated Control Equipment, Inc. (P. O. Box 136, Coraopolis, Pa.), and the National Instruments Co. (2701 Rockwood Ave., Baltimore 15) are both offering new lines of pumps.

The Associated models are pneumatically powered and controlled units that deliver a measured flow for metering and proportioning. They are explosionproof, can be powered by clean air or any noncorrosive gas, allow adjustments to be made during operation. Maximum capacities: 0.12 to 82.5 gph, with discharge pressures to 5,000 psig.

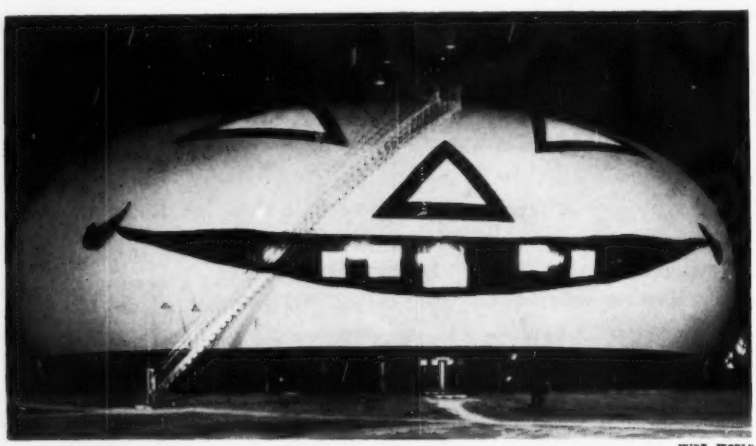
The National line features stainless steel reciprocating models that dispense measured volumes from 1/30 oz. to 16 oz./stroke. Their construction, called Cam-Lock, permits the entire mechanism to be disassembled in less than one minute.

•

Heavy-Duty Globe Valves: Two new lines of high-temperature, high-pressure valves are now being offered by Associated Valve Co. (North Wales, Pa.). Series 1291-A operates at temperatures up to 1100 F, while Series 1292-A is usable up to 900 F. Both series have a maximum pressure rating of 6,000 psig. at 100 F, and are available in sizes from ¼ in. to 1½ in., with larger sizes available according to service requirements.

•

Heavy-Duty Seals: General Hermetic Sealing Corp. (Valley Stream, N.Y.) is now offering its new, heavy-duty Gaseal for high-temperature, high-pressure sealing applications. The seal, a hollow metal ring containing inert gas under pressure, will withstand pressures to 20,000 psi. and temperatures above 1000 F. The metal rings are made of mild steel, stainless



WIDE WORLD

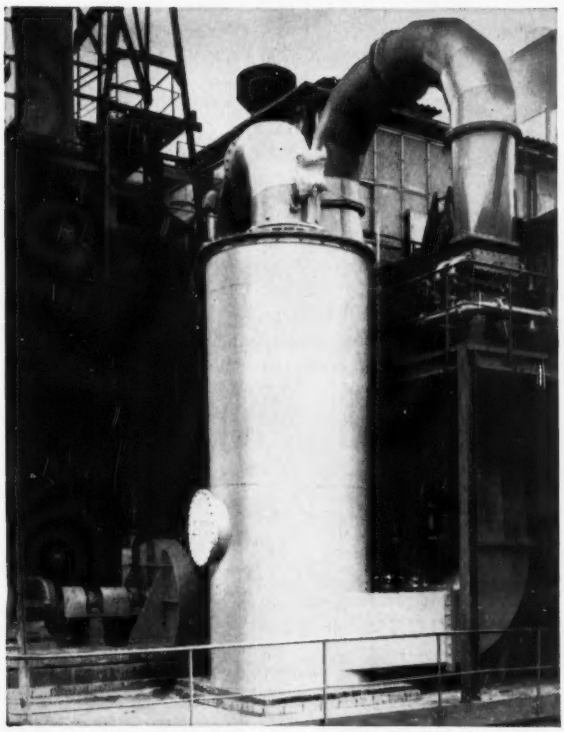
Storage Tank Dons Halloween Mask

Last week this king-size jack-o-lantern at Union Oil Co.'s Wilmington, Calif., refinery welcomed Halloween with a 73-ft. grin. The orange-colored, pumpkin-shaped, 80,000-bbls. storage tank was a "natural" for a holiday decoration. Yearly, a company crew adds a pair of 18-ft. eyes, a 14-ft. nose, and the huge, toothy smile, which transforms the 50-ft.-high tank into what may be the world's largest jack-o-lantern.

AIR POLLUTION

growing problem in the chemical industry

Chemico Gas Scrubbers offer practical solution in variety of CPI applications



The Chemico venturi scrubber installed on this phosphoric acid plant removes and recovers better than 99% of the phosphoric acid mist. In this instance, both venturi and cyclonic separator are rubber-lined to withstand the effects of the acid.

FULL DETAILS AVAILABLE

For your copy of a new brochure giving complete data on Chemico venturi gas scrubbers or for technical assistance on a specific problem, write to the address below.

Dusts, fumes and mists—the unavoidable by-products of many industrial processes—often create tremendous public relations and legal problems. The chemical industry is now taking vigorous steps to remove these nuisances.

One such step has been the application of Chemico venturi gas scrubbers which remove sub-micron as well as plus-micron particles from gas streams, thereby eliminating the polluting elements. These units are based on the Pease-Anthony venturi principle which has been modified and improved by Chemico.

• • •

OUTSTANDING PERFORMANCE ON DIFFICULT PROBLEMS

Typical of the success of Chemico venturi gas scrubbers has been their recent application to sulfuric acid concentrators which have long been a source of air pollution. By the use of this equipment, better than 99% of the acid mist can now be removed, thus solving this difficult pollution problem.

SIMPLE CONSTRUCTION PERMITS WIDE APPLICATION

The simple design of Chemico venturi gas scrubbers allows for use of materials resistant to corrosion, abrasion or high temperature. This, plus their small space requirements, permits installation in existing plants handling corrosive materials as well as incorporation into new plant designs. In addition, no critical controls are required and maintenance costs are reduced to the barest minimum. Chemico venturi scrubbers have been proven for use in acid concentrators, copperas roasting kilns, chlorosulfonic acid plants, dry ice plants, phosphoric acid plants and many other chemical manufacturing operations. These are the same scrubbers which won such wide acceptance in the iron and steel industries.

CHEMICO

CHEMICAL CONSTRUCTION CORPORATION
525 West 43rd Street, New York 36, New York

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General Sales Offices: 150 Causeway Street, Boston 14, Mass.

Sold in Canada by Brown Forest Products, Ltd., Montreal, Que. (Alpha-Floc)

steel, Monel, copper-nickel and copper alloy. Outside diameters: ½ to 96 in.

•

Fire Pump: Goodyear Pumps Inc. (9 Rockefeller Plaza, New York 20) is out with a new portable, aluminum-bodied fire pump that weighs only 50 lbs. The positive displacement pump is self-priming, operates in any position. It has a suction lift of 28 ft. while delivering 50 gpm. at 100-psi. discharge pressure.

•

Purifier: The V. D. Anderson Co. (1276 West Third St., Cleveland 13) is out with a new purifier that cleans air and steam in lines up to 2 in. in diameter, provides its own liquid storage so that a drainer is not needed. The reservoir capacities of the self-cleaning units vary from ½ pt. for cleaning ¼-in. pipe to 6½ pts. for 2-in. lines.

•

Thermometer: Transonics, Inc. (Burlington, Mass.), is out with a new 12-lb. portable electronic thermometer powered by a self-contained "C" battery or a 110-volt ac. source. Untrained personnel can take readings accurate to one-half degree from —425 F to 800 F. The thermometer has interchangeable probes. This allows a number of permanent probes —as in a series of petroleum tanks —to be read separately with one instrument.

•

Proportioning Accessories: Two companies are offering new accessories for their basic proportioning controls:

A new formula capsule from Richardson Scale Co. (Van Houton Ave., Clifton, N.J.) is designed to eliminate manual errors in blending and proportioning operations by programing the sequence and weighing of up to 24 ingredients. The pocket-size control fits into Richardson's Select-O-Weigh automatic proportioning panel, allows the quantity of each ingredient to be preset with a set screw.

The Delsen Corp. (719 West Broadway, Glendale 4, Calif.) has a new valve that permits the weighing of viscous fluids on its Autogram automatic weighing scale. The air-operated, solenoid-controlled valve uses slight air pressure to increase the flow rates of fluids with high viscosities, including those over 100,000 cps.

The legendary Firebird, the Phoenix, rose young and strong again and again from flames . . . This is the new Norton Firebird — symbol for the exciting new fused materials made in Norton's electric furnaces.

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FREE CATALOG

For a complete list, with detailed descriptions, write for the new booklet, *Norton Electrochemicals . . . Gifts of the Firebird* to NORTON COMPANY, Electro-Chemical Division, 925 New Bond St., Worcester 6, Mass.

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With this new facility onstream, Gulf is now a leading producer of the two largest-volume organics used in America's fast moving chemical industry today: ethylene and benzene. If *your* raw material requirements include highest quality benzene or ethylene—or any other large volume chemical building block—look to Gulf as a basic source of supply. Write or phone Petrochemicals Department Sales Office, Gulf Oil Corporation, 360 Lexington Avenue, New York 17, New York.

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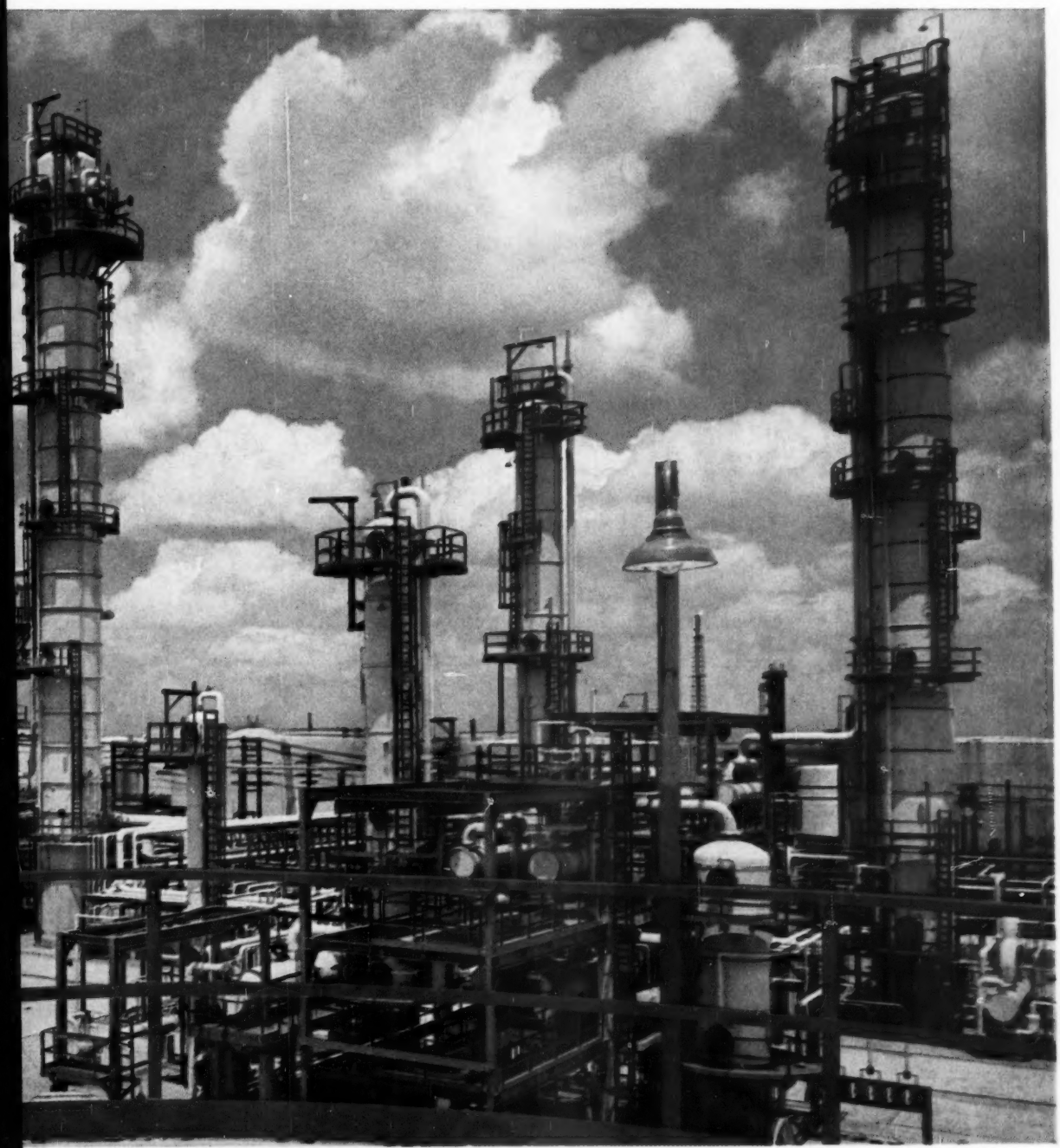
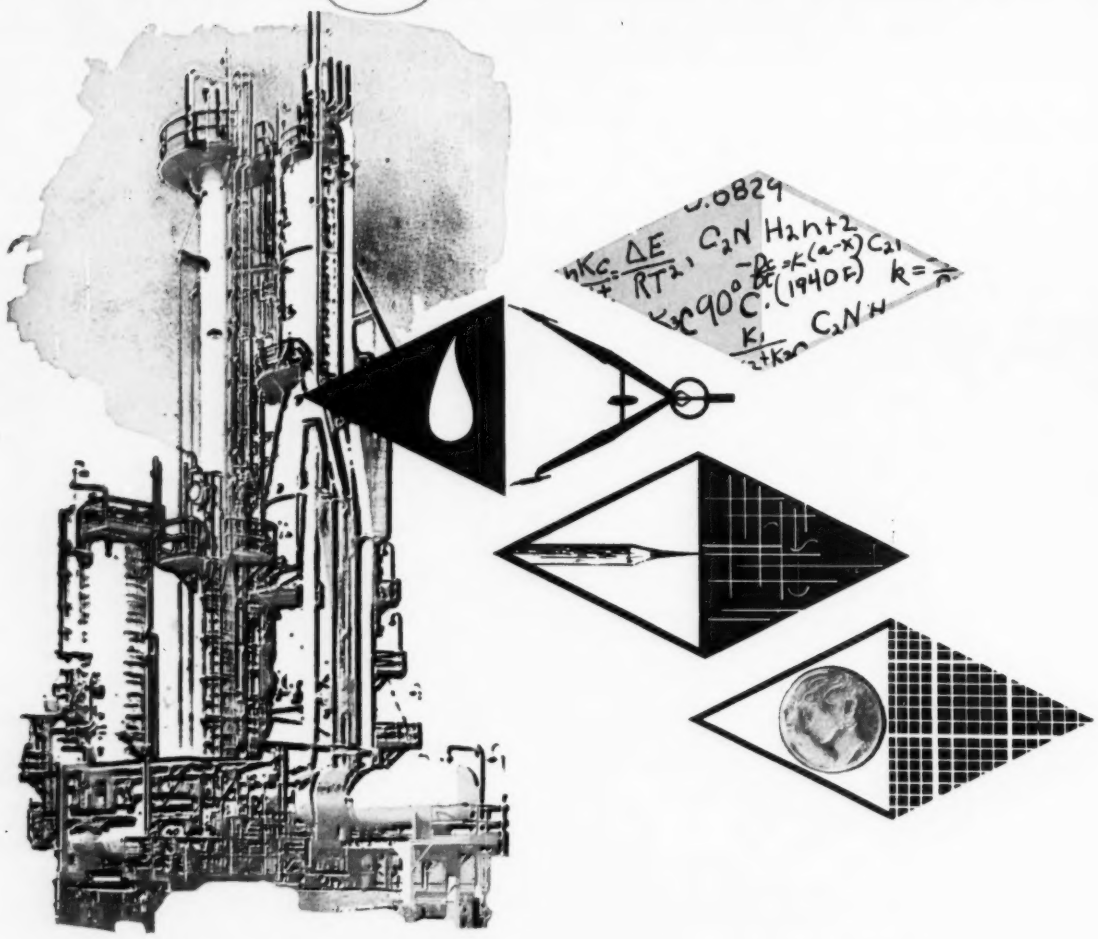


intangibles were never so important



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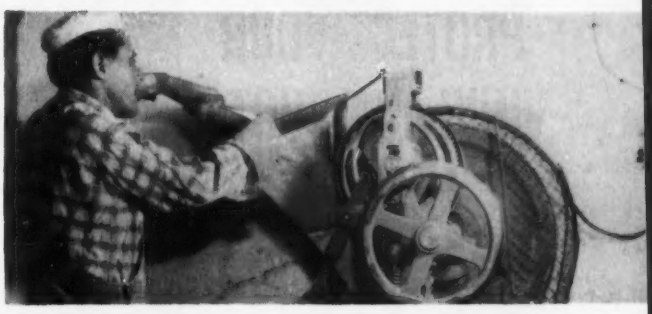
WORLD-WIDE CONSTRUCTION FOR THE PETROLEUM, PETROCHEMICAL, AND CHEMICAL INDUSTRIES

Nothing out of ordinary in operations of this Swedish soap plant.



Business as Usual in Plant Run by Blind

Recently moved into spanking-new quarters near Stockholm, Sweden, is a chemical process plant that is a contradiction to much current thinking about employing the handicapped. The plant—which makes soap and detergents—is run almost totally by blind or near-blind operators, who do a variety of critical operations.

The company, De Blindas Tekniska, Fabrik, AB Blifa, operates without subsidies, more than pays its way, and has had no serious accident in more than a decade of development. The Swedish Society of the Blind set up the plant, but emphasizes that it's not run as a charity.

Management includes a plant manager, who is not blind and who has a business background. A staff of about 30 laboratory and office workers also are not blind.

The 30 or more blind employees of the plant—more are added during rush seasons—turn out about 50 different kinds of products in a brand list numbering over 300.

The company's main production is detergents, although a few by-lines, such as specialty candles, are included. Output is sold mainly to large-scale consumers, including hotels, hospitals, schools, industries, and the like, rather than through conventional retail outlets.

Some semiautomated custom packaging for other chemical manufacturers is done, to keep the staff fully occupied during seasonal business slowdowns. This also helps management stabilize the number of employees.

Hardly Special: Contrary to what might be expected, equipment is not specialized; the company uses no

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custom-made machinery. Mixers, hoppers, cooking and blending vessels and other process equipment are of standard design, although frequently they're provided with simple safety or guidance devices.

Such modifications are generally so slight that they contribute very little to operating costs and are usually devised by the laboratory staff or an operating foreman, who is also handicapped, understands the exact needs involved. Simple alarm thermometers, audible warning instruments, or special switches placed at convenient and safe heights, are often the only alterations necessary. Scales that can be read by touch provide easy control of other equipment.

Employees are trained for specific jobs at the plant. Usually, they remain in the same jobs permanently, attain extraordinary deftness and confidence in their work. The plant also provides opportunity for a number of students at the Swedish Blind Institute to get general industrial training.

The firm ships about 10 tons of consumer goods each day, has sales of $600,000/year. Its new plant has a floor space of 22,000 sq. ft., part of which is used for warehousing materials for other industrial operations of the society, such as broom making.

Adaptability: The range of jobs undertaken by the employees is one indication of their ability to adapt to circumstances safely and productively without special equipment. For example, one employee, known to his fellow workers as "The Telescope Man," can see only within a limited scope. But by grouping his instruments at a certain spot, he is able to supervise an entire steam-cooking operation.

Another worker has trained his memory so well that he takes telephone messages involving 10 or so complicated items without writing them down. Then, he selects the items from inventory, and packs them. Paperwork involved is done by office employees. Still another employee whose vision has been restored to a limited degree by surgery, has trained himself to operate and drive a warehouse truck.

Other simple expedients are used to assist workers. In the packaging operation, for instance, labels have one rounded corner so that an operator can feel which way the tag should be applied to the container.

Employees of the plant are members of a general chemical trade union and earn wages comparable to those of nonhandicapped workers.

On certain piece-work items, of course, their slightly retarded speed affects earnings.

Few Equals: Checks with American organizations for the blind and with state agencies disclose no comparable businesses in the U.S. Indeed, it is difficult to find processing companies in the U.S. that have developed places for blind employees involving the complexity or range of jobs covered by the Swedish plant.

One organization reports that it sponsored a soap and detergent distributing and packaging operation near New York City, but that it was discontinued because it was believed that selling methods were based too heavily on sentimentality, not enough on product quality. A market research study has been suggested, looking toward a revival of the idea.

One company that has compiled reports on its handicapped employees is Du Pont. In one instance, it cites a blind woman who is assigned to stringing tags. Although standard operating procedure calls for employees with full vision to string about 4,000 of the tags in a day, she can string about 5,000.

A survey by Du Pont of more than 1,000 handicapped workers on the company's payroll shows them to be average or above in performance, safety and attendance. It also indicates that performance of those who were handicapped prior to being hired is better than performance of those who were injured while employed. The company thinks that the latter workers may not have the same motivation as those previously handicapped, or that they have not lived with the handicap long enough to have developed better skill.

Management Philosophy: Counter to the practice in the Swedish plant, where employees are used in nearly every kind of operation, American process firms seem to favor using blind people only in noncritical areas, where they present a minimum hazard to others, or where hazard to themselves is minimal. The Swedish experience would indicate that a broader use of blind employees can be made in American plants.

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MICHIGAN ALKALI DIVISION

PACING PROGRESS WITH CREATIVE CHEMISTRY

Wife understands, allays executive

Spouses Parley

A business executive's marriage can be either a complementary companionship or a competition of careers. What "administrative skills" are required to make it a successful partnership? Some answers to that question were developed by a chemical company executive and his wife last week in a presentation before members of the National Management Assn. in Detroit.

A definition of respective roles in the ideal executive-husband-and-wife relationship was made in the dramatic dialogue "Executive Sweet—the Unique Role of the Management Wife" presented with slides, skits and conversation by Mr. and Mrs. Max Forster.

He heads up management development activities for International Minerals & Chemical Corp.; his wife is a former educator and assistant dean of women at Purdue University.

"The executive personality is made up of several consistent characteristics," says Forster, "and holding up the mirror for him is his wife. Highly endowed with skills of power, he uses these special qualities to direct and control. As a result, he has been defined as an 'autocrat with democratic ideas.' "

"Because her husband is a complex type," rejoins Margaret Forster, "the executive wife must be able to help him meet the many demands of home, office, children and community—and yet maintain her individuality as a modern American woman." The latter role, she explains, is one of the most challenging, considering that the last 50 years have spiraled the American

husband's unspoken fears, problems.

On Wives' Role

woman from a simple home life to a complex, demanding existence."

Stressing that the executive becomes more secluded the higher he climbs the management ladder, Mrs. Forster points out that his wife becomes more and more the only person with whom he can candidly discuss his business affairs. "But," she adds, "as intelligent and well-informed a listener as she may be, the management wife never interferes or advises."

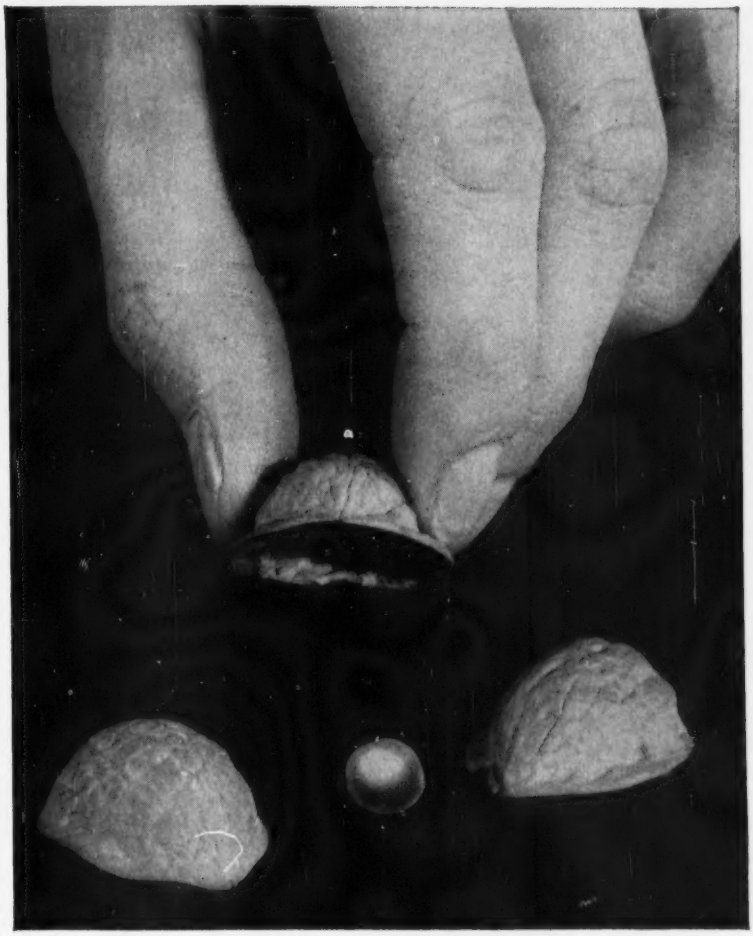
The management wife will be called on to meet many social situations, says Mrs. Forster, "and must have the necessary poise to meet them successfully. She will entertain frequently, meet her husband's associates, and be a helper to him in these situations."

The Forsters stress the mutual respect for the many demands placed upon the ideal team, suggest that an overdose of respect on both sides makes for the best kind of teamwork for the executive and his wife.

Chemical Row Buffered

City commissioners of Orange, Tex., have passed an annexation ordinance sealing off, by a 15-ft. "buffer strip," the famed "Chemical Row" where Du Pont, Firestone, Spencer and Allied Chemical are situated. Annexing the strip around a 7,500-acre industrial area prevents other municipalities from taking over any part of the reserve.

Action was triggered when officials of West Orange recently annexed 115 acres of the tract previously considered by both cities to be an industrial reserve and exempted—by mutual



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You're sure to profit by switching to 74% caustic, *if* freight savings offset conversion costs . . . and there's an easy way to check. Just call in your Wyandotte technical-service man! He's familiar with all phases of caustic soda storage, handling, and uses. He'll study every factor with you. Then, if you decide to convert, he'll help you all along the line . . . from initial planning to unloading the first tank car.

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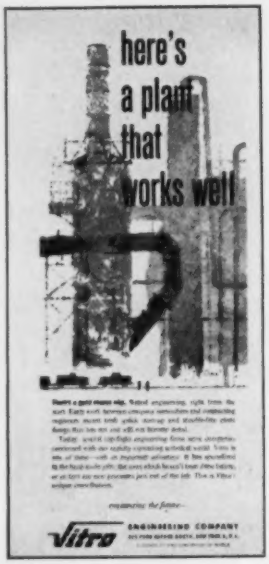
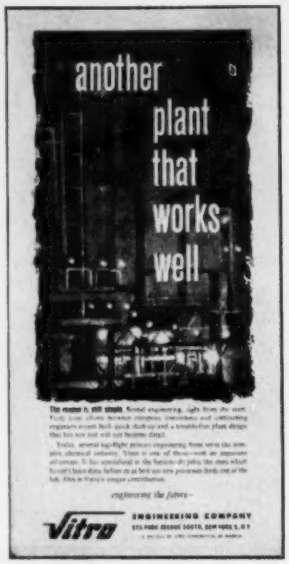
WYANDOTTE CHEMICALS

MICHIGAN ALKALI DIVISION

PACING PROGRESS WITH CREATIVE CHEMISTRY





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agreement—from either city's jurisdiction.

West Orange's school district isn't affected. Industrial tax money has reportedly made it one of the state's best school systems.

LABOR

Compensation Upset: The Colorado supreme court has ruled that perspiring employees who take showers before going home from the plant are serving their employer's interest. The decision overturned an 18-year-old doctrine on workmen's compensation in ruling an award of injury benefits to an employee of Colorado Fuel & Iron Corp. who was injured in a company shower. The court said, "The nature of the employment makes bathing reasonably incidental to the employment itself. The fact that the employer provides showers and that nearly all employees find it necessary to use them is persuasive evidence. . . ."

•

Jail Sentence: Thirteen of 14 members of Local 5-672, Oil, Chemical & Atomic Workers Union, have been found guilty of contempt of court in violating a temporary injunction that barred interference with free entry to the Sugar Creek, Mo., refinery of Standard Oil Co. (Indiana) during a dispute. The union members were sentenced to jail terms ranging from 30 days to six months. The local has been on strike at the plant since early July.

KEY CHANGES

W. B. Hall to president, Vitro Chemical Co., newly formed subsidiary of Vitro Corp. of America (New York).

D. S. Taylor to president and **C. L. Randolph** to vice-president, U.S. Borax Research Corp., subsidiary of U.S. Borax & Chemical Corp. (Los Angeles).

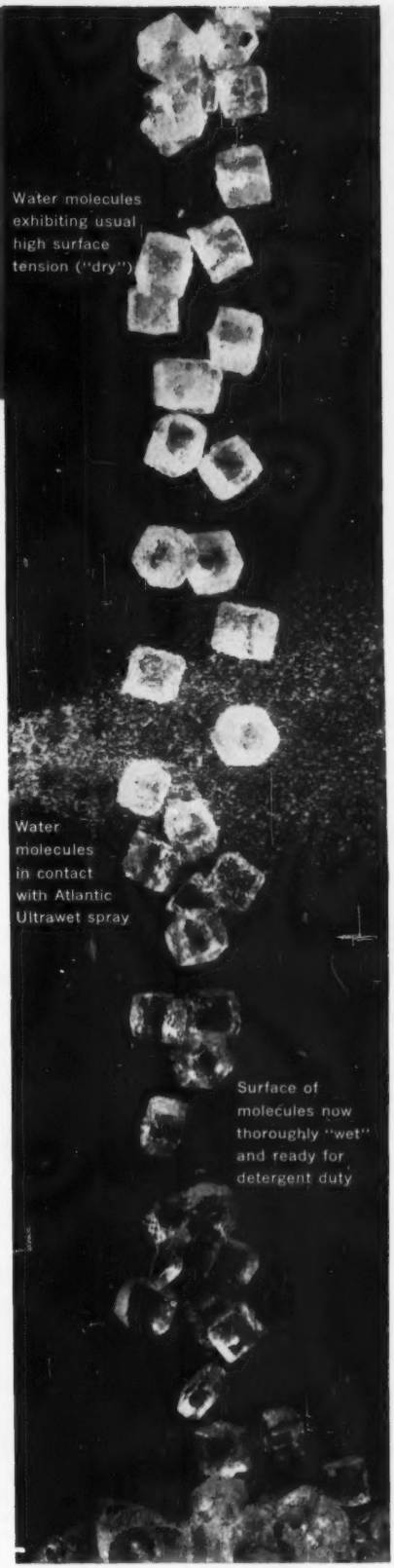
William H. Rodewald to vice-president and general manager and **Kenneth L. Russ** to sales manager, Nalco de Venezuela, C.A., subsidiary of Nalco Chemical Co. (Chicago).

Thomas Capstick, Jr., to general manager, Dixon International, Inc., subsidiary of Dixon Chemical & Research, Inc. (Bloomfield, N.J.).

John Garizio to vice-president, Reheis Co., Inc. (Berkeley Heights, N.J.).

here's how Atlantic Ultrawets go to work

DEMONSTRATION OF ULTRAWET ACTION ON WATER MOLECULES


Water molecules exhibiting usual high surface tension ("dry")
Water molecules in contact with Atlantic Ultrawet spray
Surface of molecules now thoroughly "wet" and ready for detergent duty

The picture at right demonstrates graphically the superior wetting action of Atlantic's alkyl aryl sulfonates. With less than 0.1% unreacted oil and low salt content, these superior Ultrawets can solve many problems affecting the quality of your formulations. Investigate these points of the Ultrawets' superior quality.

here's what Atlantic Ultrawets offer you

1 Lighter color. All Atlantic Ultrawets are subjected to a unique extraction process resulting in a phenomenally low unreacted oil content. The excellent color of the Ultrawets leads to better color and better color control of finished products.

2 Superior foaming. The lower oil content increases your detergent's ability to produce copious quantities of foam with prolonged foam stability. Both characteristics afford more cleaning efficiency.

3 Faster wetting and lower surface tension. With less unreacted oil content, your detergents can penetrate deeper and faster, resulting in a more thorough cleaning action.

4 Improved odor. Atlantic Ultrawets' lower unreacted oil content minimizes odor, which results in greater shelf life odor stability.

These quality advantages, coupled with Atlantic Ultrawets' high active levels, make possible product consistency and high performance resulting in substantial savings. Ultrawets are available in three forms: flake (90% minimum active), bead (40% minimum active), and liquid (31.5 to 58.0% minimum active). Atlantic's chemically trained Sales Engineers will gladly provide help, without obligation, to solve your formulation problems. Write to: Chemicals Division, The Atlantic Refining Company, 260 South Broad Street, Philadelphia, Pa.

Shown at left is model of an alkyl aryl sulfonate molecule

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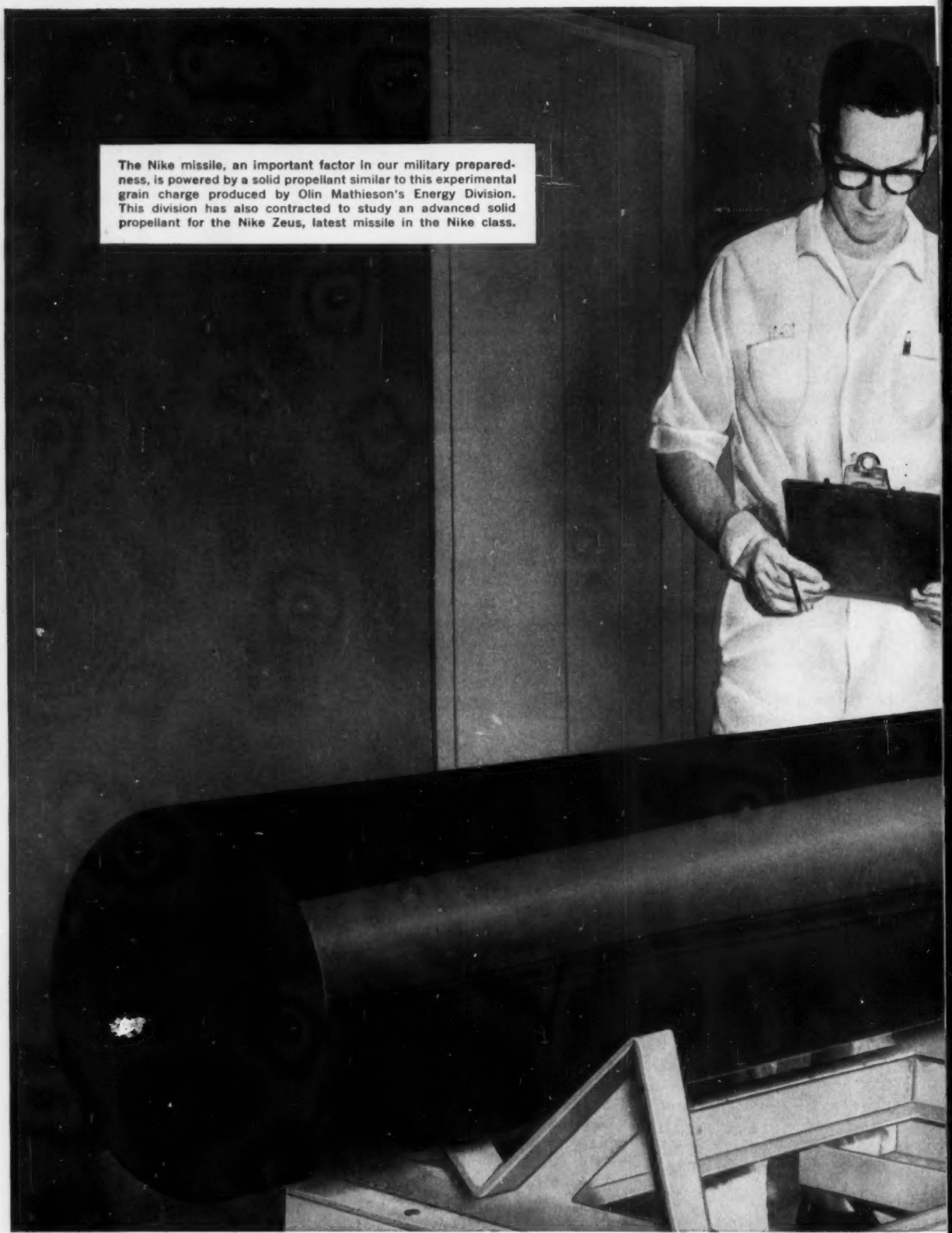

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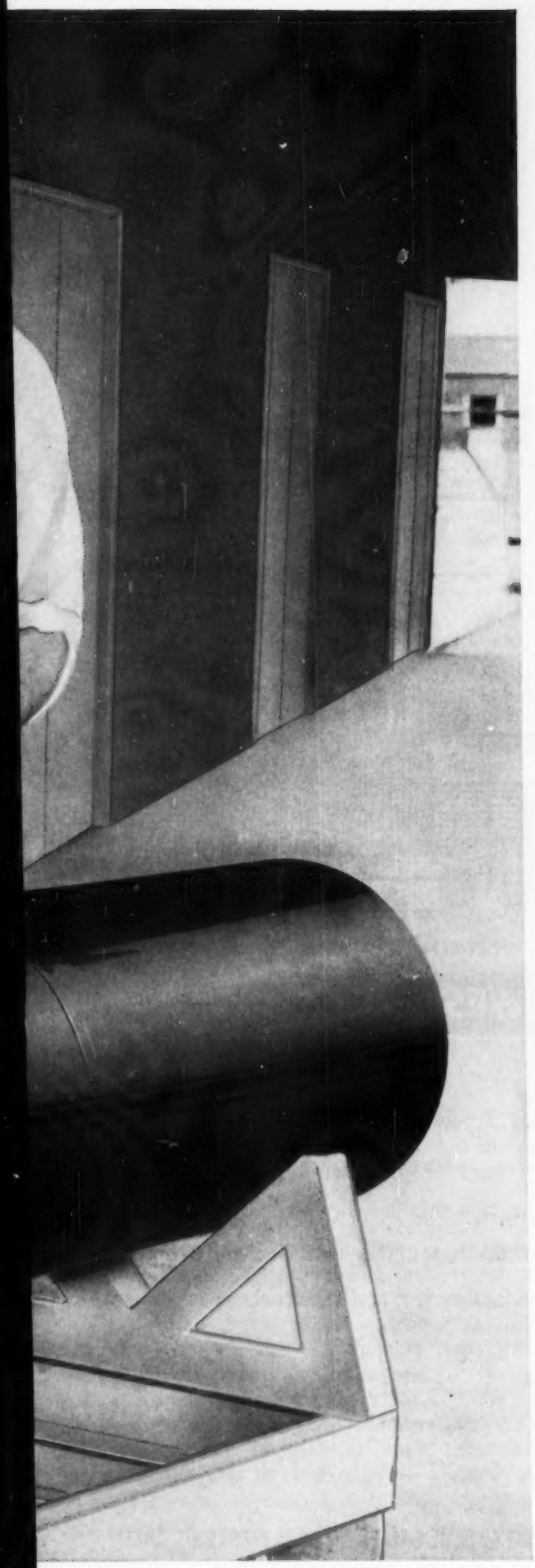
Pyrophosphate • Sulfuric Acid • Hydrofluoric Acid • Sodium Silicofluoride • Sodium Fluoride • Teox® 120 Surfactant



Answer to preparedness ...chemicals

Greater production of important chemical raw materials is a basic responsibility of the chemical industry. To be prepared to meet tomorrow's processing requirements effectively and economically, Olin Mathieson's Chemicals Division has set its sights on targets in these areas:

Urea—Early next year the new SunOlin urea plant comes on stream to produce material of quality unexcelled anywhere. *Caustic/Chlorine*—A six-million-dollar-plus modernization and expansion program at the Niagara Falls plant will greatly improve facilities in this area. *Propylene Oxide, Propylene Glycol* and *Polypropylene Glycols*—Extensive new facilities are approaching completion at the Doe Run plant in Kentucky.

These are but three examples of Olin Mathieson's continuing expansion of chemical operations. It will provide for future growth and assure Olin Mathieson customers of a dependable long-term supply of quality chemicals.

There's no better time than now to take a searching look at your source of chemical supply. If you want a smooth-running extension of your own operations, call Olin Mathieson today.

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Sulfuric Acid • Urea • Ethylene Oxide • Ethylene Glycols • Polyethylene Glycols • ethanolamines • Glycol Ethers • Surfactants • Ethylene Dichloride

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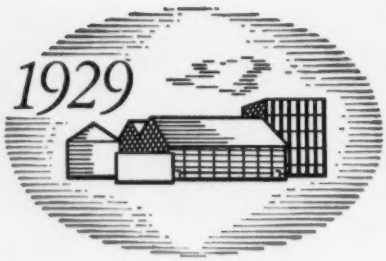

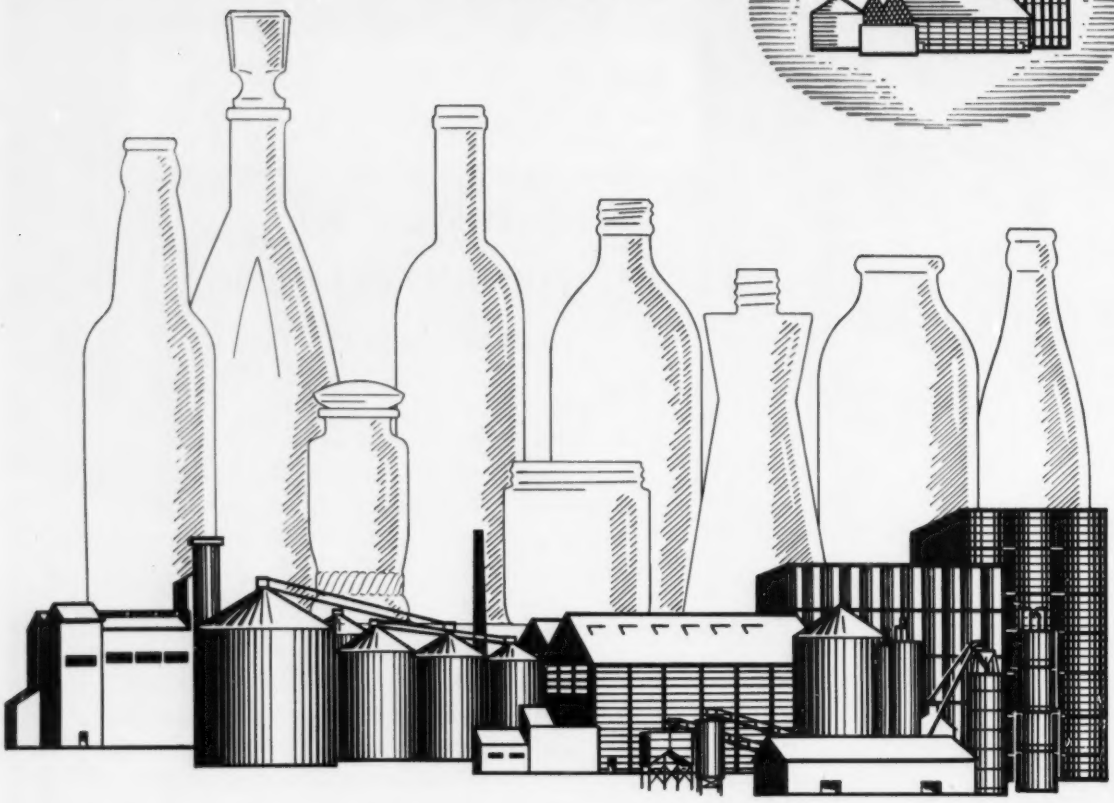

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Pickup in Fermentation R&D

Soaring confidence in fermentation as a route to new products is being reflected this week in a new round of research and development expansion.

Upjohn is putting the finishing touches on a $3-million fermentation R&D facility (including equipment, right) near Kalamazoo, Mich.; Bristol Laboratories has dedicated a $1.25-million addition to its Syracuse, N.Y., center, featuring "heavy emphasis" on fermentation; and Pfizer is moving researchers into its still-unfinished labs in Groton, Conn.

Other big firms in the field—Abbott, Eli Lilly, Merck, Squibb, Lederle, Wyeth — tell *CW* their individual R&D long-range plans are also expansionist, although no new lab construction is under way.

Lilly completed a $2-million addition to its fermentation R&D and production facilities at Lafayette, Ind., this summer. Lilly's total research budget is around $16 million this year and the firm says the planned increase in fermentation R&D "will not be disproportionate to planned increases in other areas."

R&D Showcase: Although most firms withhold details on their fermentation labs, Upjohn supplied *CW* with some data on its new R&D arm, which combines pilot plant and labs under one roof. The new "Portage Road" building neatly arrays on one-and-a-half floors a raft of new equipment plus equipment that formerly occupied four floors of an aging red building beside the New York Central railroad tracks in Kalamazoo.

Twenty small (20 liter), 20 large (400 liter), and two "full" (2,000-gal.) fermenters line its floor. Its staff of 45 is backed by equipment (e.g., filter presses, centrifuges, solvent extractors, freeze-drying apparatus) for separating and purifying new antibiotics. And a chemistry section, in laboratories across the front of the new building, works to improve yields of both new and in-production drugs and chemicals.

Because the solvents used (acetone, methylene chloride, methanol, butanol, etc.) are hazardous, an extensive exhaust system is provided. Carbon dioxide is available at solvent-using units, spurts out if the temperature rise reaches 18 C/minute.

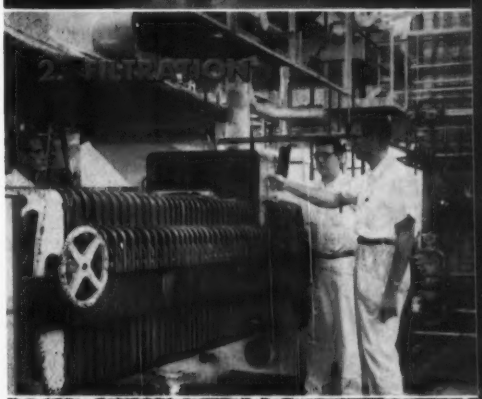
One Upjohn-developed feature is a central control, called a pipe rack, for transferring fluids among any vessels in the building. It is convenient, safe, and is designed to preclude transfer of material to the wrong tank, which can happen if a header (branched, overhead pipe) is used.

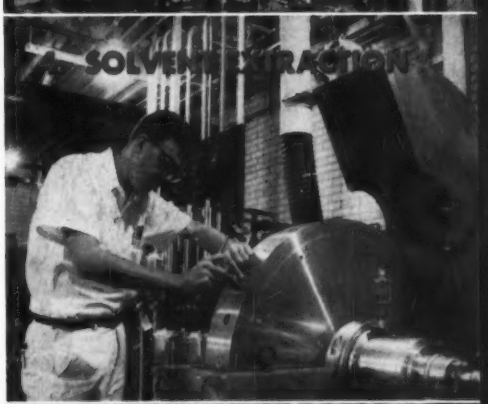
Cost-cutting innovations in the laboratories include a new type of narrow lab bench that permits installation of service connections before the cabinet is enclosed; exhaust tubes ($150 each) that remove fumes from six solvent-containing jars, replacing conventional, $500 hoods; and sprays that cool the bottoms of nutrient trays in 5 seconds, instead of the 15 minutes previously required.

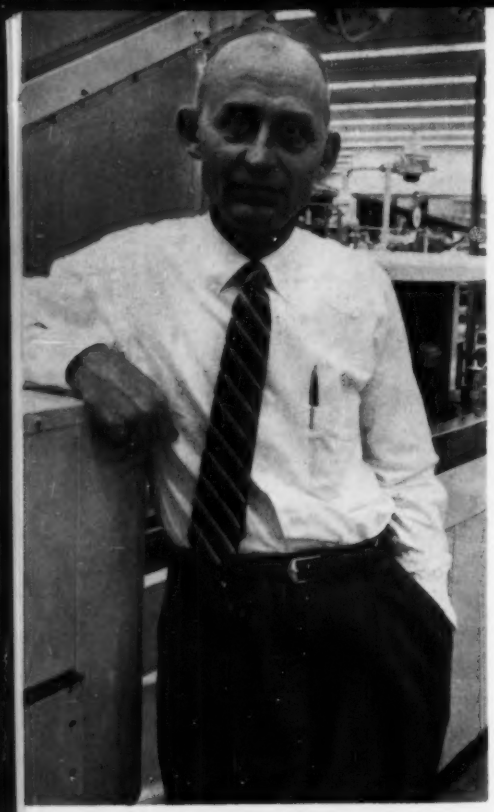
Scientific Trend: With the help of research, fermentation is creeping away from its once wholly empirical status. More is being discovered about how aeration, temperature and other variables influence fermentation yields and products. (One still-unresolved problem: how to make synthetic nutrients — natural protein, carbohydrate and mineral nutrients are required.)

But this research is expensive, both in terms of new capital investment and in operation. It may be justified if a profitable fermentation product helps underwrite the cost. This accounts for the relative lack of newcomers into the field and heavy R&D outlays by established firms.

Here to Stay: Floyd Eberly, Upjohn vice-president (production, development and engineering) and director, points out: "We're convinced this thing [fermentation] is here to stay, and we've set about putting it in its proper perspective" — i.e., giving it the investment it requires. Eberly looks for new chemicals as well as new antibiotics and drugs to come from his firm's heavy stake in fermentation R&D. Upjohn carved a prominent niche in steroid production (in '50) and fielded the agricultural antibiotic Actidione after entering the antibiotics market in '43 with the production of penicillin. Current development work includes upping







Upjohn's Eberly expects to brew up a lot of profitable new products.

the yield of its commercially flourishing antibiotic novobiocin (Albamycin), useful against certain antibiotic-resistant infections.

This week, at the seventh annual symposium on antibiotics in Washington, Upjohn researchers are describing two new antibiotics, Fervenulin and Streptozotocin, which have been looked at for antitumor and antibacterial activity, respectively.

Synthetic Modifications: New, synthetically modified penicillins occupy much of the fermentation research of Pfizer and Bristol (*CW Technology Newsletter, Oct. 31*) and of Wyeth and Abbott. Lilly, Pfizer and Merck are much interested in gibberellins. Merck, Lederle and Squibb lean heavily to steroid studies.

But the scope of fermentation research isn't quickly encompassed. It's a worldwide effort spawning polyglot offspring (e.g., Bristol is mass-producing Japanese-developed kanamycin). New companies are constantly eyeing its potential (e.g., Warner-Lambert, *CW Technology Newsletter, Oct. 31*). Regardless of this protean quality, fermentation has two sure parameters—it takes a big R&D investment to start in the business—and to stay in it.

Plant Growth Regulator

A new chemical that makes plants "short and stocky" is under study at Michigan State University agriculture experiment station (East Lansing). Called CCC, it is 2-chloroethyl trimethylammonium chloride, and is the discovery of Nathan Tolbert. It has been tested on wheat, poinsettias, tomatoes and other plants, and may be commercially useful.

Treated plants have a shorter and thicker stem and a shorter distance between leaf stalks. Tillering (sending out more than one stem that will bear fruit) of wheat is increased, possibly increasing wheat yields. Greenhouse tomatoes, when treated, are strong, bushy, flower early, have higher yields. Shorter, more compact poinsettias and philodendrons yielded by the chemical may increase esthetic appeal of the plants.

While CCC and related compounds don't appear to be toxic, they are related to nerve-affecting compounds, which inhibit choline esterase, and are getting further experimentation by American Cyanamid in cooperation with the university.

EXPANSION

• Charles Bruning Co., Inc., manufacturer of diazotype reproduction machines and papers, is readying a new $1-million research center for completion by Jan. 1, '60. The new center, in Prospect, Ill., will be staffed by 70 chemists and technicians.

• Archer-Daniels-Midland has set up a joint plastics research program with A. Boake, Roberts & Co., Ltd. Work will be in the field of epoxidation and will be carried out at the firms' laboratories in Minneapolis, and London, England.

• Armco Steel Corp. will spend $3.5 million to double the size of its main research building in Middletown, O. New facilities will provide for Armco's entry into nuclear research.

• Spaulding Fibre Co. (Buffalo, N. Y.) has started construction of a new laboratory for plastic laminates and vulcanized fiber research. Completion target date: March '60.

• Associated Testing Laboratories, Inc. (Caldwell, N.J.), will build an environmental testing facility in Orlando, Fla.

• The Continental-Diamond Fibre Corp. (maker of plastics products) has centralized its research in a new, $350,000 laboratory in Newark, Del.

• Texas-U.S. Chemical Co. will build a research and development laboratory for polymer and petrochemical studies in Parsippany, N.J. Construction is slated to start in May '60. Executive offices of the firm, jointly owned by Texaco and U.S. Rubber Co., are in Port Neches, Tex.

• Atlas Powder Co.'s Darco Division has dedicated a $500,000 activated carbon research laboratory at Marshall, Tex.

• Esso Research and Engineering Co. dedicated its scientific center at Florham Park, N.J., this week. The 675-acre center includes three structures housing some 800 engineers, scientists and aides, will initially be devoted to engineering and oil processing research.

PRODUCTS

Tougher Rubber: Du Pont has stepped up the resistance of its Viton synthetic rubber from 500 F to 600 F and prolonged its life in red fuming nitric acid and glacial acetic acid. Viton (*CW, March 29, '58, p. 39*) is a copolymer of vinylidene fluoride and hexafluoropropylene.

•

Oxide Dust: Development quantities of metal oxide powders in extremely small particle sizes are now available from Monsanto Chemical Co., Research & Engineering Division, development department (800 North Lindbergh Blvd., St. Louis 66, Mo.). They are Micria AD and AL (aluminas), Micria TIS (titania) and Micria ZR (zirconia). Suggested uses: catalyst carriers, thermal insulators, solvent thickeners, polishing agents, and organic dye stabilizers.

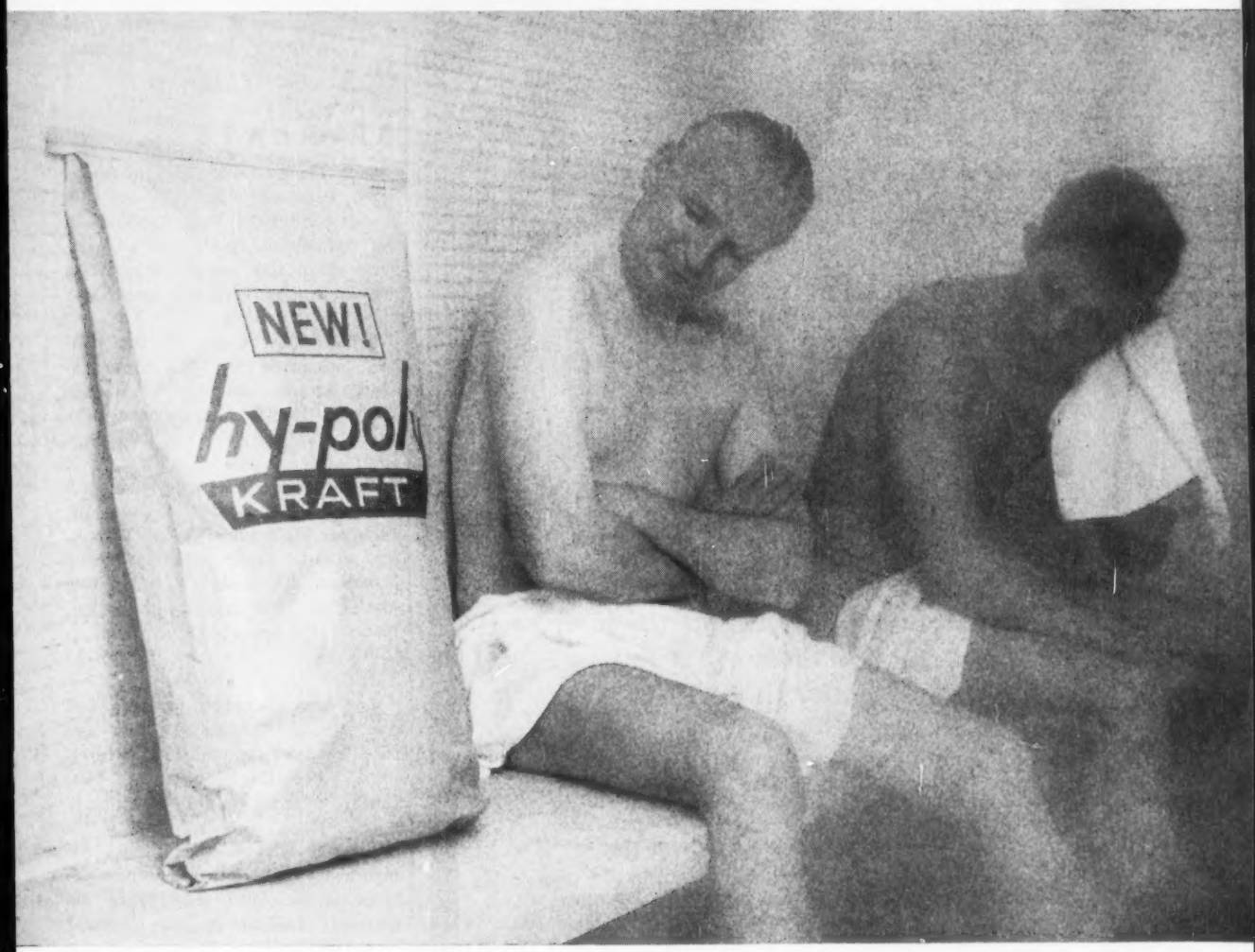
•

Silicate Entry: Sylvania Electric Products, Inc. (New York), subsidiary of General Telephone & Electronics Corp., is out with a new electronic-grade potassium silicate that contains 35% solids, 6% more than other commercially available silicate. Known as PS-7, it features high purity, is slated for TV and cathode-ray-tube manufacturing uses.

•

Thiamine Offering: Fallek Products Co., Inc. (New York) offers thamine propyl disulfide (Alinamin) for in-

Now International Paper saves you $5 to $16 per thousand PE multiwalls!



Read why new humidity-proof "Hy-poly" kraft makes medium and low-density polyethylene sheets extravagant!

THE multiwall bag you see taking a Turkish bath in our picture contains *calcium chloride*.

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But when we opened up the bag, the thirsty crystals spilled out as though they had been stored on the Sahara!

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That's because new Hy-poly kraft is so superior to medium and low-density PE sheets that you get equal, if not greater, moisture-vapor protection from a coating approximately *half as thick!*

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RESEARCH

vestigative use. It's an oral B vitamin, may require acceptance by Food & Drug Administration.

•

Metal Rarity: Experimental quantities of scandium metal are now available from St. Eloi Corp. (Box 507, Newtown Station, Cincinnati 44, O.).

APPARATUS

New Flame: Technicon Instruments Corp. (Chauncey, N.Y.) is out with a new automatic flame photometer for sodium and potassium analyses. Unit eliminates sample preparation and continuously records results.

•

Wrist-Saver: A new electric mortar and pestle for pulverizing research samples can be obtained from Crescent Dental Manufacturing Co. (1837 Pulaski Rd., Chicago 23, Ill.).

•

Paper-Ouster: American Machine & Foundry Co.'s Amflex products department (Springdale, Conn.) is making a filter paper substitute called Fiberfilm. It's made of borosilicate glass fiber impregnated with Teflon, features resistance to chemicals up to 500 F.

•

Jar Gain: Ceramic (Ceralon) ball mill jars that feature low wear and eliminate silica contamination are new from Abbe Engineering Co. (420 Lexington Ave., New York).

•

Furnace Kit: A solar furnace for high-temperature research is now offered in kit form ($2,975) or assembled ($4,875) by the Thermal Dynamic Products Division of the Waltham Precision Instrument Co. (Waltham, Mass.). The furnace reaches 6741 F in seconds with heat flux densities up to 365 calories/sq. cm./second.

•

Tube Tops: Flexible polyethylene centrifuge tube closures (Capall) that feature new design and won't stress-crack can now be had from Aloe Scientific Division of the Brunswick-Balke-Collender Co. (St. Louis, Mo.).

•

Quick Changer: Fisher Scientific Co. (Pittsburgh) offers a new attachment that converts a two-pan analytical balance into a recording instrument. Price: about $625.

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Other	0 ppm
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Ethane	100 ppm
Propane	0.5%
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Nitrogen	10 ppm
Carbon dioxide	6 ppm
Water	25 ppm
Sulfur	4 ppm

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For samples and information about these aldehydes and other Eastman industrial chemicals, call our nearest sales office or write to Eastman Chemical Products, Inc., Chemicals Division, Kingsport, Tennessee.

For properties and shipping information on these and other Eastman products, see **Chemical Materials Catalog**, page 357 or **Chemical Week Buyers Guide**, page 97.

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Technology
Newsletter

CHEMICAL WEEK
November 7, 1959

Urethane fiber makes its commercial debut with Lycra, Du Pont's first new fiber since the company introduced Dacron six years ago. It's a member of the new "spandex" family (a generic name approved by the Federal Trade Commission early this year to cover fibers containing at least 85% segmented urethane). The new entry will be aimed at replacing rubber in women's foundation garments, swim suits, etc.

Du Pont will build a commercial plant (of undisclosed capacity) at Waynesboro, Va., to manufacture Lycra, which was called Fiber K (*CW, Aug. 15, p. 23*) during its years of development. Until the first unit is operating in late '60, supply will be limited. Among the advantages claimed for the new product over rubber: lighter weight and finer denier; inherently white in color, with good dyeing properties; greater restraining power, flex life and durability. Still on the sidelines is U.S. Rubber's Vyrene, another spandex fiber, but it may be ready soon.

•

A new butadiene-styrene latex for making foam rubber will be marketed to foam-makers at 20-30% under the natural latex price. Called Pliolite 5352, it is Goodyear Tire & Rubber's answer to natural's soaring price—up 8¢/lb., to 42¢, in the past 18 months.

Goodyear says the new latex, to be made at its Akron, Ohio, plant, is the result of a $1 million, 18-month research program. Tests show foam made with the new latex is lighter, whiter, has aging properties twice as good as natural latex foam. Germicidal and fungicidal properties of the new foam reportedly "are considerably better than any other cushioning or foam material."

•

Add Central Soya Co. to the roster of firms stepping up fermentation research (*see page 63*). On its R&D agenda: citric, lactic, fumaric, and maleic acids—and antibiotics. The firm's chemurgy division last week dedicated a new soya protein plant in Chicago that can make 5 million lbs./year of edible dispersible protein and some nondispersible proteins. In five months, the plant is scheduled to turn out "protein 70" (tentative identification) that will cost about 20¢/lb. and analyze 70-75% protein. This may find use in fermentation reactions, says Central Soya.

•

A new type of diuretic, introduced by G. D. Searle & Co. (Chicago, Ill.), is now undergoing clinical testing. Unlike other diuretics (e.g., mercurials, chlorothiazide), it works against aldosterone, the human hormone that contributes to retention of excess fluid in body tissues—a condition associated with congestive heart failure, hepatic cirrhosis and other serious disorders. Named Aldactone, the new drug is chemically 3-(3-oxo-7α-acetylthio-17β-hydroxy-4-androsten-17α-yl)propionic acid γ-lactone. Over 80% of about 1,000 patients have benefited from the new drug, says Searle—often where other diuretics failed. It has a synergistic

effect with conventional diuretics, offsets potassium loss when administered concomitantly with them. However, Aldactone is more expensive since it is costly to synthesize.

•

Electric power can be generated directly from hot gases in a new device—the magnetohydrodynamic generator—unveiled last week by General Electric. Based on a principle discovered over a century ago by Michael Faraday, the unit has no moving parts, operates at temperatures high enough to ionize the gas to a plasma. As the hot gas speeds between powerful magnetic poles in the unit, free electrons are diverted into an external load circuit by the bending forces of the magnetic field.

GE has operated the unit with a plasma of air heated to 5000 F, obtaining about one kilowatt of power for five seconds. Efficiency of converting thermal energy into electric power by the new method is expected to range between 40-50%, compared with about 35% efficiency of conventional turbogenerators.

Magnetohydrodynamic generators capable of operating on the hot exhaust gases of rocket engines are believed to be feasible. GE estimates that a unit big enough to power a satellite transmitter for a two- to three-second burst could be developed in six months to two years. Missile-borne generators capable of continuous operation, using solar or nuclear heat sources, will require "several years" to perfect, says GE, and magnetohydrodynamic power for general use is "at least two decades away."

•

Boron crystals can now be made by a new floating zone method disclosed this week by Bell Telephone Laboratories. Key: a powder-bonding technique that permits granular boron to be pressed into bars that can be handled without breaking. (Ordinary pressed shapes crumble easily.)

The process, developed by Bell Labs' Earl Greiner, involves coating boron powder (—20 to 100 mesh) by boiling it to dryness in boric acid solution. Pressed bars of the coated powder are then heated in two stages under vacuum for one hour at 300-600 C to decompose the boric acid into a liquid coating of boron oxide, which later hardens to form a strong bond between the boron particles. When the bars are subjected to floating zone melting in a high-frequency induction coil, the boron oxide binder sublimes below the melting point of the element (about 2000 C). This technique has yielded relatively large boron crystals (up to 0.1 in.) for semiconductor research applications.

•

An unusual twist at next month's Chem Show: a group of lawyers have obtained rights to a novel reactor, have had a model built and will put it on display. They hope to uncover some chemical applications for it.

The machine, called the Mistifier, brings materials together as a fine mist, throws them into violent, intimate contact. The hope is that it may speed up reactions, help convert batch processes to continuous ones. It may also find jobs in such unit operations as gas absorption, extraction, drying, size reduction and distillation.

This hypodermic could help cure your ailing gas conditioning system

This could be *your* sample ethanolamine solution that is being injected into a gas chromatograph for chemical analysis. This is just one of the many methods used by Jefferson's extensive research laboratories in Austin, Texas, to help you solve your gas processing problems. A wealth of technology and experience in such problems as high temperature corrosion, contamination, foaming characteristics, and excessive glycol losses is available expressly to serve your needs.

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Industrial Alcohols Plant slated for Continental Oil Company

ALFOL facility to be Constructed at Lake Charles, Louisiana, Will be Completed Early in 1961

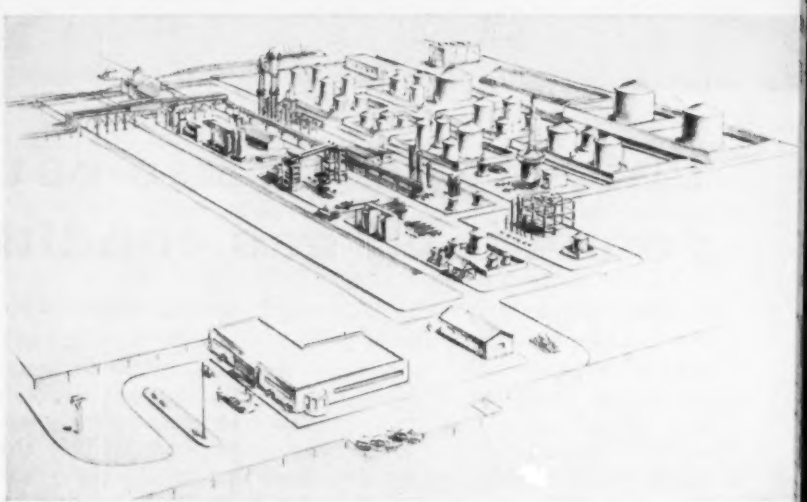
Continental Oil Company has announced that The Lummus Company has been awarded the contract to engineer and construct an Industrial Alcohols Plant at Lake Charles, Louisiana with a capacity of more than 50,000,000 lbs/yr.

These higher alcohols will be manufactured by a new technique originally conceived by Dr. Karl Ziegler. Organo-metallic catalysts are used to promote chain/growth of ethylene followed by oxidation and hydrolysis to primary straight-chain alcohols containing an even number of carbon atoms.

With completion of the plant these fatty alcohols will be available for the first time from petroleum rather than the natural sources such as tallow fat and coconut oil from which they are now produced. These primary alcohols to be marketed under the Conoco trade name of "ALFOL", will be used in the manufacture of detergents, plastics, cosmetics, lubricating oil additives, paper, textiles and emulsifiers.

The primary raw material, ethylene, for these new products will be obtained from the ethylene plant operated at Lake Charles by Petroleum Chemicals, Inc. of which Conoco owns a 50% interest. This plant was also engineered and constructed by Lummus.

In the past 50 years, Lummus has built over 800 plants to produce petrochemicals, chemicals and petroleum products. If your company is planning facilities of this kind, discuss your plans with Lummus.



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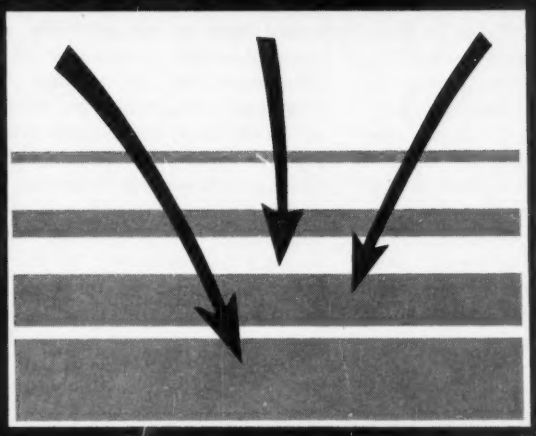
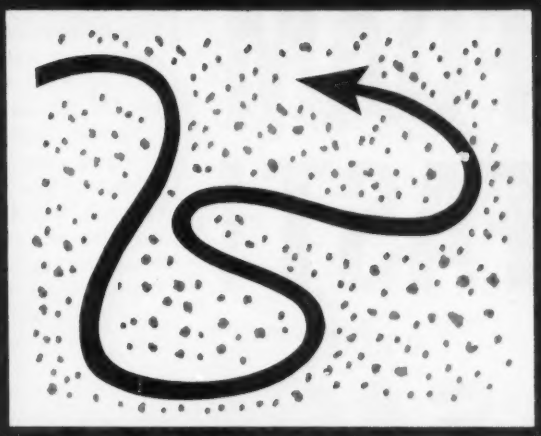
Gas sterilization of powders goes "on line"





Problems of static sterilization method . . .

(1) Poor penetration requires long exposure to gas — as much as 24-48 hours.

(2) Prolonged exposure subjects material to degrading effects of gaseous sterilants.

(3) Compact powders may retain residual traces of sterilant.

. . . are solved by drier-blender-sterilizer

(1) Intimate contact between gas and powder reduces time to only 4-8 hours.

(2) Operating conditions and product quality are more easily controlled.

(3) Continuous motion facilitates complete removal of gas from product.

Gas Sterilants Break the Powder Barrier

This week Wilmot Castle Co. (Rochester, N.Y.) is readying a powder-sterilizing process for its first general public showing at next month's Chem Show in New York. Heart of the new system is a team of modified equipment components —Castle's gas sterilization control unit and Pfaudler Permutit Inc.'s double-conical blender—which combines powder drying, blending and sterilizing into a single, automatically controlled, "on-line" operation.

Castle has proved the effectiveness of the new technique in commercial-scale lab tests on a number of pharmaceutical products, believes the process will extend the use of increasingly popular gas sterilants (*CW, Sept. 26, p. 51*) in treating other types of hard-to-handle powdered products. On powders treated in the lab, says Castle, the blender achieved better results in four hours than an autoclave would provide in 24 hours.

Powder Problems: Development of the Castle-Pfaudler blender-drier-sterilizer began about two years ago when two pharmaceutical companies sought Castle's help in breaking powder-sterilizing bottlenecks. Conventional techniques involve exposing powders (in open trays or sealed plastic bags) to gaseous sterilants, such as ethylene oxide in carbon dioxide, in a sealed container or "vault." Because of the difficulty with which the gas penetrates powders, this type of operation requires long exposures—generally one to two days—and increases any degrading effect the reactive sterilant may have on the product. Sterilization of packaged powders increases the penetration problem; exposure of thin powder layers in open trays improves penetration, but is limited to small quantities.

Both pharmaceutical producers seeking Castle's help had tried conventional drum sterilizers, found that results showed considerable improvement when the drum was rotated during sterilization. Following up this lead, Castle focused its development effort on a tumbling-type unit, which bypasses the penetration problem, assures intimate contact between the gaseous sterilizing agent and each particle of powder.

Modified Equipment: By adapting the new technique to Pfaudler's standard drying and blending equipment, Castle came up with a processing package that affords added production economies from the flexible combination of these powder-finishing operations. The major equipment changes: Pfaudler's standard glassed-steel blender (stainless steel or other materials of construction may also be used, depending on the products) has been modified to use a standard autoclave closure; Castle's sterilizing-cycle control unit has been equipped with additional components

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to regulate processing temperatures, rotational speed of the blender and automatic sequencing of operations.

The flexibility of the system is a very important feature, says Castle, since the equipment is costly if used only for sterilization. Prices of basic, ready-to-run units range from $20,000 for a 2-ft.-diameter blender to $53,400 for an 8-ft.-diameter unit.

Powder processing conditions may be varied over a wide range of temperatures—from 300 F down to that of brine refrigerants—and pressures from 30 psi. to high vacuum. The economics increase with size, says Castle; for example, the 8-ft. unit handles 64 times the charge, yields 3½ times the efficiency of the 2-ft. unit.

The product range is also expected to be quite broad, says Castle, though lab tests, to date, have barely scratched the surface. In addition to pharmaceuticals, certain fine chemicals and food products may also be suited to the new technique. In the latter category, Castle foresees no large-volume applications because the process is not continuous, doesn't lend itself to sterilization of carload quantities. But it may find application for such products as whey powders, special soy and wheat flour glutenates, and baby foods, which have higher standards on allowable bacteria.

Exploring the Future: To help potential users develop custom-tailored processing cycles, Castle has set up laboratory test units, which do double duty in technical service and application research. Some of the products slated for study: crystalline organics used for injection purposes, biological materials, seeds.

One problem still to be solved is the packaging of products after processing to maintain sterility. For the small, 2-ft.-diameter blender, the company has developed a special closure that permits a polyethylene bag to be sealed to the charging port by a special gasket arrangement. The bag is sterilized simultaneously with the powder. At the end of the processing cycle, the powder is discharged into the bag, which is then sealed before the gasket seal is broken. The larger units will require the use of other handling techniques, such as total enclosure of the drier-blender-sterilizer, together with packing equipment in an aseptic area.

Fast Catalyst Check

The routine job of evaluating cracking catalysts and oil feed stocks at California Research Corp.'s Richmond, Calif., laboratories has been turned over to an automatic pilot plant. Requiring a minimum of human supervision, the test unit yields four times more output per operator man-hour than the former manual analysis, saves Cal Research about $60 on each catalyst evaluation test.

Heart of the test unit is a unique combination of programing timers designed and developed by Cal Research engineers. All functions and the sequence of operations are controlled by one Cramer and two Bristol timers. By making one of the Bristol timers a "slave" to the others, the engineers obtained additional check points from which six more conditions could be automatically controlled. Operating time in the various portions of the test cycle can be changed readily by changing prepunched timer discs.

Unlike the previous catalyst evaluation system, which required a full-time operator, the new plant needs attention for only two to four hours of a two-shift day. Turnaround time for changing catalyst and setting up new cycle between test runs requires about a half-hour. Complete catalyst evaluation—two cycles, including distillations—takes about six hours.

Only one operator is required for two test runs per day. One test is started in the morning and completed near the end of the first shift. The operator picks up the first sample, recharges the unit for the night run and picks up results of the second test the following morning.

The pilot plant's operating speed was achieved by a drastic modification of the unit's heat-control equipment. Since cracking is carried out at about 900 F and regeneration at 1100 F, rapid heat exchange is needed to minimize the operating time intervals. Proper placement of cooling coils did the trick, cutting the cycle time by 35%.

Testing Versatility: The primary job of the fluid catalyst test unit is to measure the activity of catalysts currently in use, and to evaluate those offered by various suppliers. It's also employed in the evaluation of crack-

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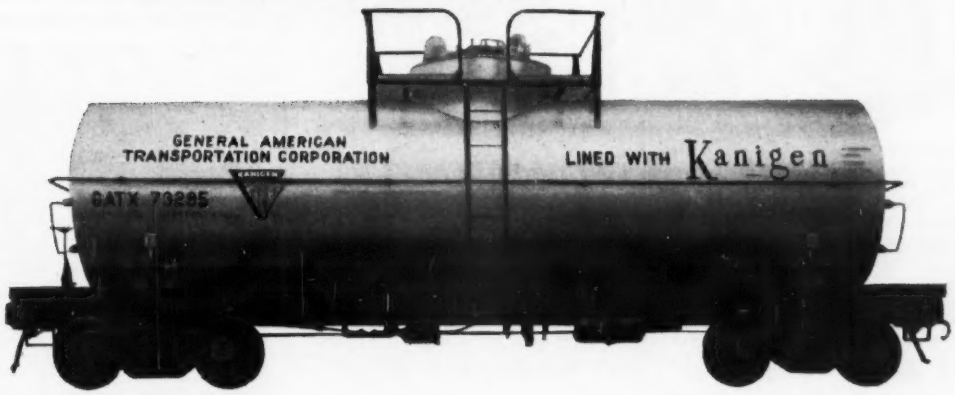

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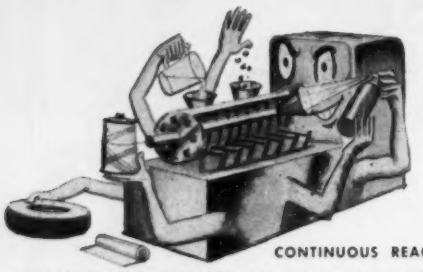

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ing characteristics (e.g., refractivity, product distribution at conversion conditions, octane, sulfur content) of oil feed stocks. This is particularly important to Standard Oil of California (Cal Research's corporate parent), which is supplied with 15-16 different crudes. Each must be checked for quality and performance before it is fed to refinery cracking units.

The automated unit can also handle catalyst aging studies, which involve longer runs of alternate cracking and regeneration. To date, it

Helium Buildup

With the official startup this month of the Bureau of Mines' newest and largest helium plant (*above*) at Keyes, Okla., the government will almost double its capacity for extracting helium from natural gas. At peak operation, the Keyes plant is designed to process 50 million cu.ft./day of natural gas, averaging about 2% helium content, for the production of 290 million cu.ft./year of high-purity helium (99.995%). The importance of the Dept. of Interior's helium conservation program (*CW, June 21, p. 26*) is underscored by the growing demands of the missiles program and by recent developments of cryogenic applications of liquid helium (boiling point: —452 F) in electronics and free-radical research.

hasn't been used for aging tests because Cal Research is keeping it busy on a large backlog of the other jobs. Eventually, the pilot unit will run routine checks on catalyst samples from all SoCal refineries around the country to help keep units operating at peak efficiency.

PROCESSES

Polyester Compound: At Germany's Max Planck Institute for Coal Research, Guenther Wilke has come up with a new compound—trivinylcyclohexane—that's believed to have potential use in polyesters. Starting material is cyclododecatriene-1,5,9—a large, unsaturated-ring product made by another Planck-developed process (*CW, Oct. 3, p. 50*). In his work on 12-link compounds, Wilke discovered that trivinylcyclohexane can be obtained in yields of greater than 90% from the isomerization of cyclododecatriene-1,5,9 at 500 C. Isomerization can be carried out continuously by passing cyclododecatriene vapor through a heated column, with the addition of steam or inert gas to lower the pressure. Trivinylcyclohexane is recovered by a distillation unit, which may be coupled to the reactor to form a completely continuous process.

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Sulfur Removal: Universal Oil Products has developed a new sulfur-removal method—the Merox process—that's said to eliminate regeneration problems encountered in other desulfurizing and sweetening processes. Key: catalytic oxidation of mercaptans to form insoluble disulfides.

Conventional caustic wash treatments used for the removal of mercaptans from gasoline and lower-boiling fractions require regeneration by steam stripping at the boiling point of the caustic solution. The catalytic agent employed in the Merox process, on the other hand, permits the caustic to be regenerated by blowing a small quantity of air through it. The insoluble disulfides may then be removed by conventional gravity separation. Cost of treating gasoline stocks with Merox is less than the 1¢/bbl. cost of conventional mercaptan extraction and copper sweetening, says UOP. Catalyst costs are expected to be "considerably less" than 0.1¢/bbl. of treated oil.

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Market Newsletter

CHEMICAL WEEK
November 7, 1959

Prices of epichlorohydrin have been reduced 3¢/lb. The cut, initiated by Shell Chemical Corp., was quickly followed by reductions by Dow and Union Carbide. New tabs (at point of delivery): 27¢/lb. in tank cars, 29.5¢/lb. for carloads, 31¢/lb. l.c.l.

Reason for the new price: to expand the market for epichlorohydrin. But the move is also tied in with Shell's new glycerine from acrolein-hydrogen peroxide unit at Norco, La., which should be in operation the early part of next year. Shell now makes both glycerine and epichlorohydrin from allyl chloride at its Houston, Tex., plant. Startup of the 35-million-lbs./year Norco glycerine unit would allow Shell to shift some glycerine production from Houston (with 120-million-lbs./year capacity), permitting more allyl chloride capacity to be used for epichlorohydrin and other derivatives.

Meanwhile, Shell's new 25-million-lbs./year phenol plant at Houston is due onstream shortly. The new facilities will be the last step in Shell's integration back to raw materials for the production of epoxy resins. When completed, the Houston facilities will be able to produce phenol, epichlorohydrin, acetone, bis-phenol A, as well as the epoxy resins themselves.

Glycerine production hit an all-time high in the first three quarters of '59. During this period, a total of 193.9 million lbs. (synthetic plus crude natural material) was produced. Outlook for the rest of the year indicates that production will likely exceed 250 million lbs. Previous peak was the 244 million lbs. registered in '56. Yearly production has never since equaled the record.

September production hit a record monthly high of 24.9 million lbs., slightly more than the 24.3 million produced in August. However, part of the increase was forward buying due to the price advance, effective Oct. 1 (*CW Market Newsletter, Sept. 19*).

Exports of glycerine will exceed imports during '59, for the first time in 10 years. Worldwide demand has meant that only 7.1 million lbs. reached the U. S. in the first eight months, while exports were 13.3 million lbs.

•

Ammonia production facilities are now being expanded at Dow Chemical's Texas Division plant in Freeport. Completion is scheduled for early '60. Dow uses by-product hydrogen from its chlorine operations, plus nitrogen from the atmosphere, in making ammonia.

•

Chlorine capacity is due for another boost with the expansion of Olin Mathieson Chemical Corp.'s facilities at McIntosh, Ala. Current capacity is about 250 tons/day. With the proposed addition of a new cell bank to the two already installed, capacity will probably be upped 125 tons/day.

The McIntosh, Ala., plant is located in the "paper belt" of the South, and most of the new capacity will be for that industry. Since chlorine will be produced via the electrolytic method, the company will also produce the coproduct caustic soda, for use by the rayon industry.

Other chlorine expansions proposed or completed this year include Jefferson Chemical's 150-million-lbs./day unit at Port Neches, Tex., Wyandotte's 300-million-lbs./day plant at Geismar, La. Also under way: modernization of Diamond Alkali's facilities at Painesville, O., and Stauffer's Niagara Falls operations (*CW, March 7, '59, p. 113*).

•

The West Coast's first acrylic emulsion unit is in operation. Reichhold Chemicals is now producing material at its South San Francisco plant. Acrylics, in competition with both butadiene-styrene and vinyl acetate, have been pushing hard for the water-based paint market (*CW, Aug. 1, p. 60*). And Reichhold's initial two products, Synthemul 9400 and Synthemul EDX-1, are geared for these outlets. The company also operates two other acrylic emulsion units, one at Jacksonville, Fla., the other at Elizabeth, N. J.

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More high-purity metal capacity is in the works. American Smelting and Refining Co.'s newly installed facilities for high-purity (99.999%) arsenic are now in operation at the company's Central Research Laboratories (South Plainfield, N.J.). The expansion, which triples current output potential, will be used in semiconductor compounds and special low-melting glasses. Last week Kaiser increased its capacity of an extrapure-grade aluminum unit at Mead, Wash. (*CW Market Newsletter, Oct. 31*). Price for the arsenic material: $50/100 gm. ampules.

•

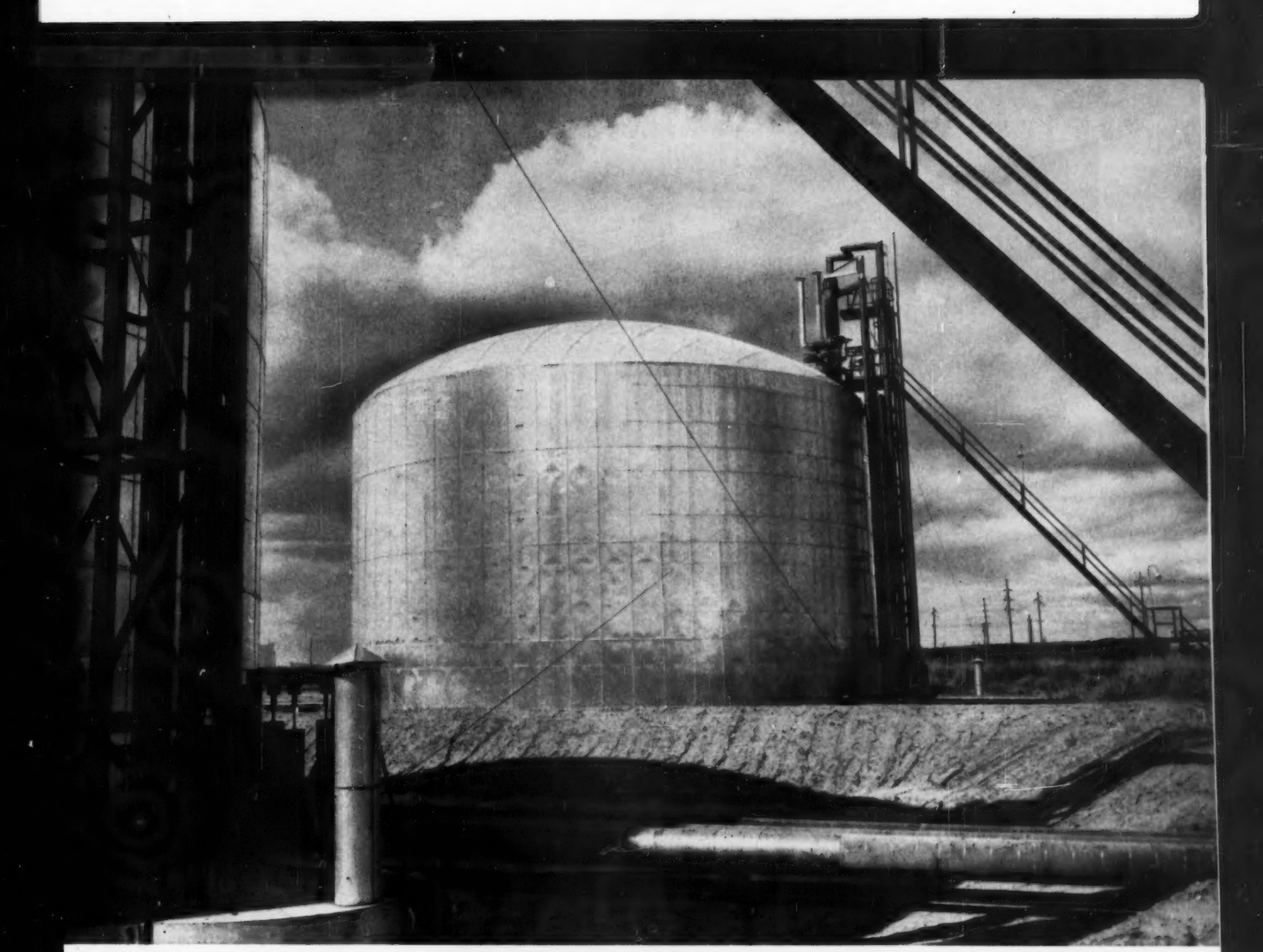
Prices of sorbitol solution were lowered last week. The new price posted by Atlas powder: tank cars, 16¼¢/lb.; carload, truckload, 18¢/lb.; y.c.l., 19¢/lb.

Another of last week's price drops: Union Carbide's reduction of tags on organosilicone copolymers L-520 and XL-521. New price is $2.56/lb. in 55-gal. drums; $2.65/lb. in 5-gal. drums.

SELECTED PRICE CHANGES—WEEK ENDING NOVEMBER 2, 1959

	Change	New Price
UP		
Citral, CP, bots.	$0.50	$3.50
Linseed oil acid, dist., dms.	0.005	0.205
Peanut oil, crude, tanks	0.005	0.13
DOWN		
Coconut oil, crude, tanks, Pac. Coast	$0.0025	$0.1875
Cottonseed oil, refd., salad, tanks	0.00125	0.125
Soybean oil, crude, tanks	0.00125	0.0825

All prices per pound unless quantity is quoted.



Novel Aluminum-Insulated Tanks for Double-Duty Storage of Liquid Butane and Anhydrous Ammonia

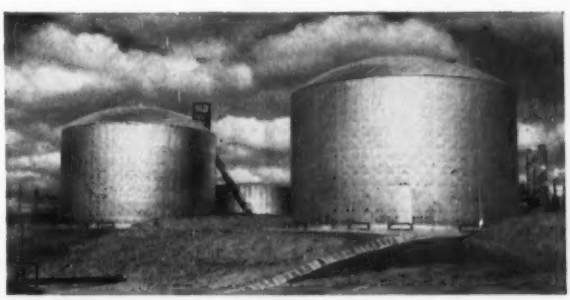
The science of cryogenics is no more profitably applied than at St. Paul Ammonia Products, Inc., Pine Bend, Minn., where two 45,000 bbl. low-pressure, refrigerated steel tanks with multiwall aluminum insulation were recently placed in dual-service.

During the summer and fall, liquefied butane is stored at +25°F. During the winter and spring, anhydrous ammonia is stored at —18°F. The design pressure, in both instances, is 5 psig.

Thus, in summer when butane is more readily available, the two tanks preserve huge quantities of potential B.t.u.'s in a relatively small area, thanks to storage as a liquid at a low temperature and pressure. The butane is used by St. Paul Ammonia as a raw material for manufacturing anhydrous ammonia, which, in turn, is stored in the tanks for the spring, when demand from fertilizer users is heaviest.

A low operating cost is achieved by a completely automatic system of filling and emptying the tanks. Outer layers of aluminum to reflect the sun's rays provide an insulation that effectively aids in maintaining the desired temperatures. Asbestos Products, Inc., St. Paul, installed this novel insulation.

Designed, fabricated and field-erected by Graver, these two tanks represent one of many types of cryogenic storage and processing equipment Graver has been called on to design and produce. The opportunities for cutting costs and improving efficiency are substantial when the science of cryogenics can be employed. If there is an application in your operation, it will pay you to talk it over with Graver.



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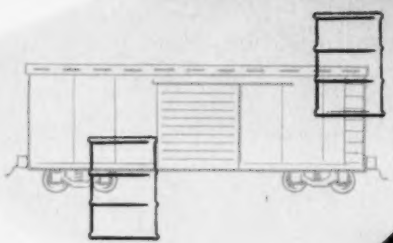

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All-Purpose Detergents' Lengthening Lineup

Now back on dealers' shelves in 14 Western states is Genie, Colgate-Palmolive's entry in the $100-million all-purpose liquid detergent market. Genie, center of a thundering legal storm about C-P's right to use that magical-sounding name, is typical of products that have in the last five years thrown the major soap companies off balance, pushed some specialties makers to prominence, and threatened to extinguish others.

Moreover, the so-called heavy-duty, multipurpose liquids—such as Lestoil, Handy Andy, Mr. Clean—have dimmed the debut of heavy-duty liquid Wisk, and drawn complaints from consumers and trade experts alike that they're ineffective, bad smelling and overpriced. Nevertheless, their sales have rocketed.

While Colgate's current trademark hassle reflects merchandising battles that have hiked sales of the versatile liquids, it also illustrates the big soapers' haste to get in on a market they had almost overlooked.

Multipurpose liquid cleaning formulations have been sold for more than 20 years by many small local producers, but neither their sales nor performance drew much attention. It was not until '54 that one of these small companies, Adell Chemical Co. (Holyoke, Mass.), burst upon the public with Lestoil, an industrial detergent it had been selling to commercial laundries since the '30s. A spectacular TV advertising campaign skyrocketed its sales from $500,000 in '54 to $31 million in '58.

This small-company-makes-good story did not go unnoticed by the major soap companies. They decided they could do what Adell was doing, and do it better. Slow to start, their big promotional guns began to let go about the same time. Lever started to test-market its Handy Andy in July '58, put it into national distribution by March '59. Procter & Gamble introduced Mr. Clean late in '58, went national with it last July.

Colgate also launched its Genie in '58. But when it opened its sales campaign on the West Coast, it seemingly was unaware that a similar product, Jeenie, had been sold in the area since '54. Jeenie, made by Jay S. Conley (Mountain View, Calif.), was being retailed largely in hardware stores, and sales were only in the $30,000/year range. But when Colgate, unleashing a $2-million promotion program, started selling Genie, Conley sued. It got an injunction to prevent C-P from offering its product in the Coast states, but this was lifted recently, pending C-P's appeal (*CW Business Newsletter, Sept. 5, Oct. 17*), and both firms clearly have a long fight ahead.

Who's Ahead? It's difficult to determine just which product is selling best. For one thing, they are not sold in the same places. Handy Andy and Mr. Clean are available throughout the country. Lestoil is sold everywhere but on the West Coast, and Genie only in 14 Western states. But in terms of total sales and in test markets such as Pittsburgh and Syracuse, where all four are found, Lestoil is still No. 1. Mr. Clean and Handy Andy are battling for second and third places, while Genie is reported to be in the fourth spot. (There's a big sales span, however, between positions No. 3 and 4.)

Also competing are Pine-Sol (Dumas-Milner), So-Kleen (B. T. Babbitt), Liquid Soilax (Economics Laboratory), Liquid Barcolene (Barcolene), Bon Ami All-Purpose Cleaner (Bon Ami), Texize Cleaner (Texize Chemicals), Speedy Fels (Fels), Perfex (Tidy House Products), and a host of others.

The war has not been without its casualties. Bravo, made by wax-giant S. C. Johnson (Racine, Wis.), has reportedly been withdrawn from the market. A departure from the usual all-purpose cleaner, floral-scented Bravo, colored blue, packaged in a plastic bottle, claimed to be a disinfectant and deodorant, as well as an all-purpose detergent.

And a few other companies are silently de-emphasizing their liquid products. Economics Laboratory, for example, which makes granulated detergent Soilax, brought out Liquid Soilax 18 months ago. Today, it refers to Liquid Soilax distribution as "spotty" and is willing to chalk up

CW PHOTO—DOUG KIRKLAND

Lestoil is still out front, but slower-starting detergent makers are fast closing the gap in detergent race.

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the venture as unsuccessful: "We can't afford to advertise in this market. We can't compete, and we make no bones about it."

Decline of the Powders: A few years ago, granulated detergents—e.g., Spic and Span, Soilax and Oakite—had over 70% of the household cleaning business; liquids most of the other 30%. Now those figures are reversed. Some companies that make only liquid cleaners think the powders will be replaced entirely. Others, like P&G, which makes both Spic and Span and Mr. Clean, feel that the market will expand to include both liquid and powders. The fate of the powder products may be similar to that of the laundry bar soap, which was virtually pushed out by the advent of automatic washers and flake detergents and is no longer a major soap item.

There's no doubt that powder makers are alarmed. P&G, actually competing with itself, has added green color, pine scent and a bacteriostat to Spic and Span. This upgrading took place about the same time the firm introduced Mr. Clean. Economics Laboratory, faced with declining sales of granulated Soilax, is vigorously attacking the liquid products in its current advertisements.

Formulations: Chemical formulas of the all-purpose liquids are closely guarded. Basically, there are two types—the solvent, which contains a combustible hydrocarbon solvent, and the nonsolvent, noncombustible mixture. Lestoil is an example of the former. Its composition is thought to be something like this: sodium red soap, 5%; petroleum solvent (likely naphtha), 25%; pine oil, 15%; sodium tripolyphosphate, 1%; nonionic surfactant, 3-4%; and a trace of sodium hydroxide, in a water base. Colgate's Genie also is in this class.

Handy Andy is the nonflammable type. According to trade sources, it is a compound of potassium soap, 4%; potassium pyrophosphate, 10%; sodium alkyl aryl sulfonate, 2-3%; sodium sulfate, 0.5%; monoethanolamide, 3%; the rest—80%—is water plus small amounts of pine needle oil, menthol and colorant. Mr. Clean's formula is generally regarded as similar.

What They Claim: These detergents are claimed to be all-purpose, heavy-duty liquid cleaners for all

household cleaning and laundering. Some of their advertised uses include the cleaning of floors, walls, woodwork, sinks, stoves, bathtubs, garbage cans, rugs and upholstery, dishes, dogs, automobiles, paint brushes, lingerie, woolens, general family laundry (used either alone or as a booster), windows, combs and brushes, Venetian blinds, etc. They are generally diluted with water for most cleaning jobs, but may be used full strength for removing stains.

Some detergent chemists say these cleaners are misnamed—that they're neither all-purpose nor heavy-duty. A more accurate description, according to one consultant: medium-duty, limited-purpose liquid cleaners.

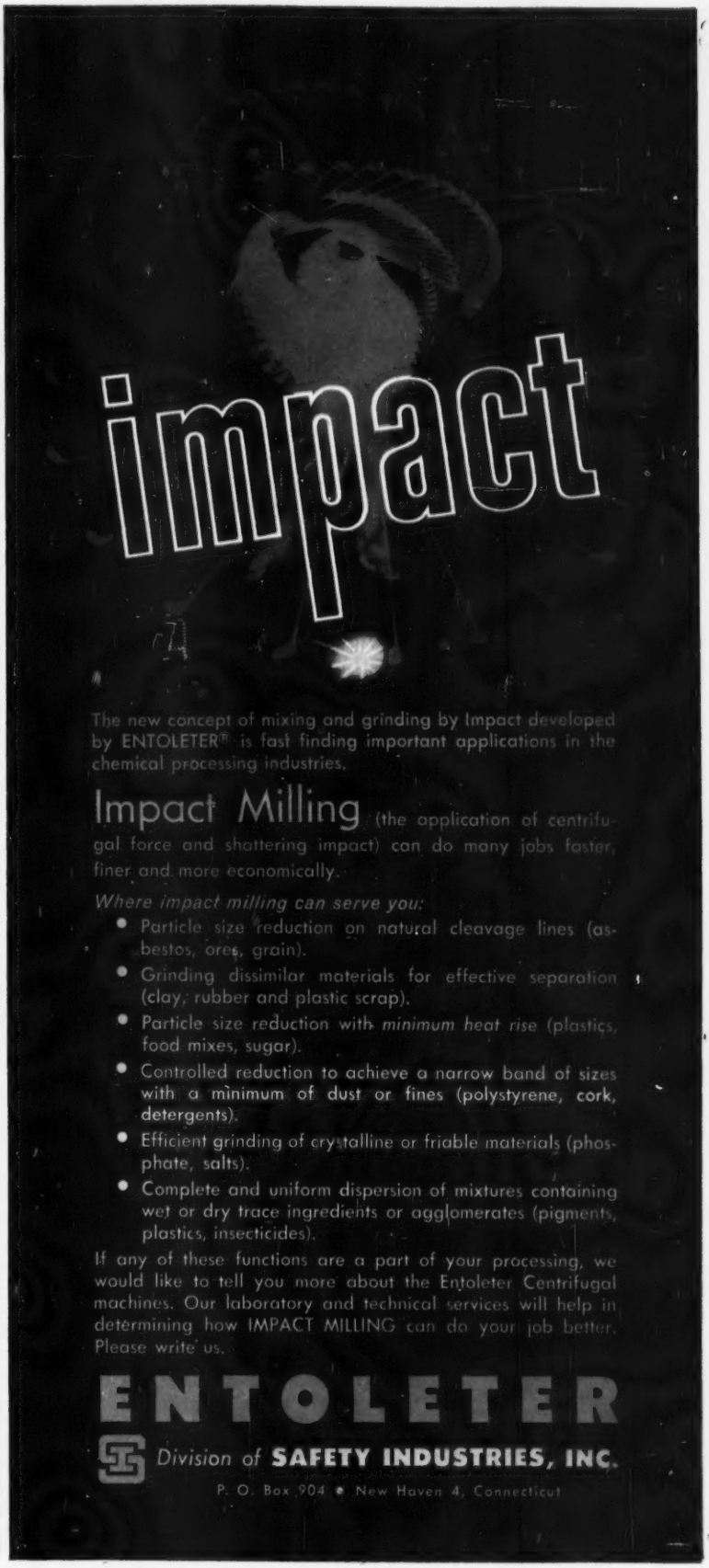
More accurately described as heavy-duty detergents, according to trade observers, are Wisk, Lever's liquid product for laundry, and Tide, P&G's granulated laundry detergent.

Local and Private Brands: There are a profusion of regional and local liquid detergent makers, some of which offer rugged competition to the big soapmakers. One of these companies, Texize Chemicals (Greenville, S.C.) has been marketing Texize Household Cleaner since '47 in the Southeast and Southwest. Texize, like Adell Chemical, has a striking success story: its gross sales in '47 amounted to $330,000, topped $10 million last year, are expected to reach $20 million this year.

Texize had no successful competitors in its areas until last year, when Mr. Clean and Handy Andy made their debut. Despite this competition, the product reportedly is still No. 1 seller locally (Texize sales dropped 20% since the big names moved in, but it still has 80% of the market). However, Texize officials are conservative in their statements about how the cleaner is faring.

"Naturally, we will experience a share-of-the-market decline since we had no competition until last year. The new competition is welcome . . . Until about a year ago, the burden of selling the idea of a heavy-duty liquid detergent rested almost entirely upon us," says E. H. Kittredge, Jr., Texize executive vice-president.

Another Southern company, Household Products (Wilson, N.C.) introduced a liquid detergent, Easy Monday, about the same time Handy Andy and Mr. Clean came into the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market. William Huplits, senior partner, says, "Our progress has been slow. We have not pushed it because, with all the turmoil, there would be little point in adding our drop of water to the ocean."

It's the same story with Dumas-Milner (Jackson, Miss.), which makes White Wave, as well as better-known Pine-Sol. Vice-President Vincent Tateo says his company will not do any heavy advertising "until the current battle subsides and we see just what the field is."

On the West Coast, there's the now famous Conley's Jeenie, and White King's Sun, which has been sold in Los Angeles for about a year.

In the Detroit area, some local brands are Rosenthal's All-Purpose Cleaner (Rosenthal Cleans-Quick) and Amazo (Amazo Products). Both have been made for about 15 years.

In New York-New Jersey metropolitan district, Royce Chemical has been marketing Royox since '37. It's a jellied liquid, which sells for about 10¢ cheaper than liquid national brands. The company relies on window displays, outdoor advertising, and limited radio-TV spots, but has slowed down on all forms for advertising, presumably until the smoke of the current battle has cleared.

Private brands are gaining in importance. One Eastern private labeler which sells to about 100 supermarket chains, says that the movement began to gather steam only this summer: "When Lestoil was the only product on the market, there was no demand for all-purpose liquids. Since Mr. Clean, they've become a big item for us." And, most of the demand is for noncombustible cleaners (which do not have to carry a warning label). The company estimates that private-brand detergents are 30% cheaper than the national brands on the grocery shelf.

Markets Abroad: Since these products are still getting on their feet in this country, most detergent makers haven't given much attention to the foreign market. Mr. Clean is manufactured and marketed in Belgium as Mr. Dox, in Canada as Mr. Clean. In Venezuela, it's called Don Lintio. Lestoil is sold in Canada and Bermuda; Pine-Sol in 18 foreign countries, most of them South American; and Colgate's Genie in western Europe.

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Progress Report...

— 2-Methyl pentaldehyde
— Epoxy resins
— Butanol
— Metal-drawing compounds

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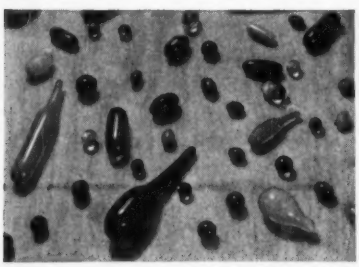
2-Methyl pentaldehyde is easily oxidized to 2-methyl pentanoic acid or reduced to the corresponding alcohol. It can be condensed with itself or other aldehydes to form esters, aldols, and higher condensation products. In reaction with formaldehyde followed by hydrogenation of the reaction product, 2-methyl-2-propyl-1,3-propanediol is obtained. This diol is an intermediate in the preparation of meprobamate tranquilizers.



Since 2-methyl pentaldehyde contains a reactive carbonyl group, it is easily converted to cyanohydrin, hydroxy acid, acetal, or to other organic compounds. This method of reaching such compounds should be evaluated in the synthesis of pharmaceuticals, plasticizers, rubber chemicals, dyes, resins, and insecticides.

2-Methyl pentaldehyde is supplied by CARBIDE in tank car or tank truck quantities, in compartment tank cars or trucks with other CARBIDE chemicals, or in 55-gal. drums (LCL or carload lots). Samples are also available. For detailed information, call the Technical Representative in your nearest CARBIDE office.

A Technical Information Bulletin on 2-methyl pentaldehyde can be obtained by checking the coupon.

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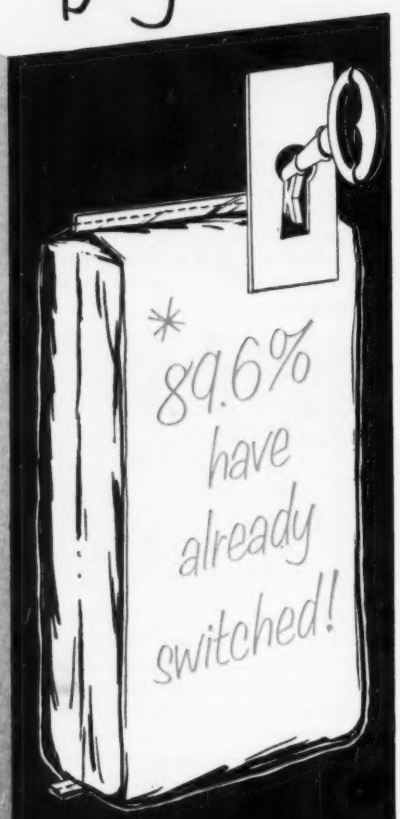

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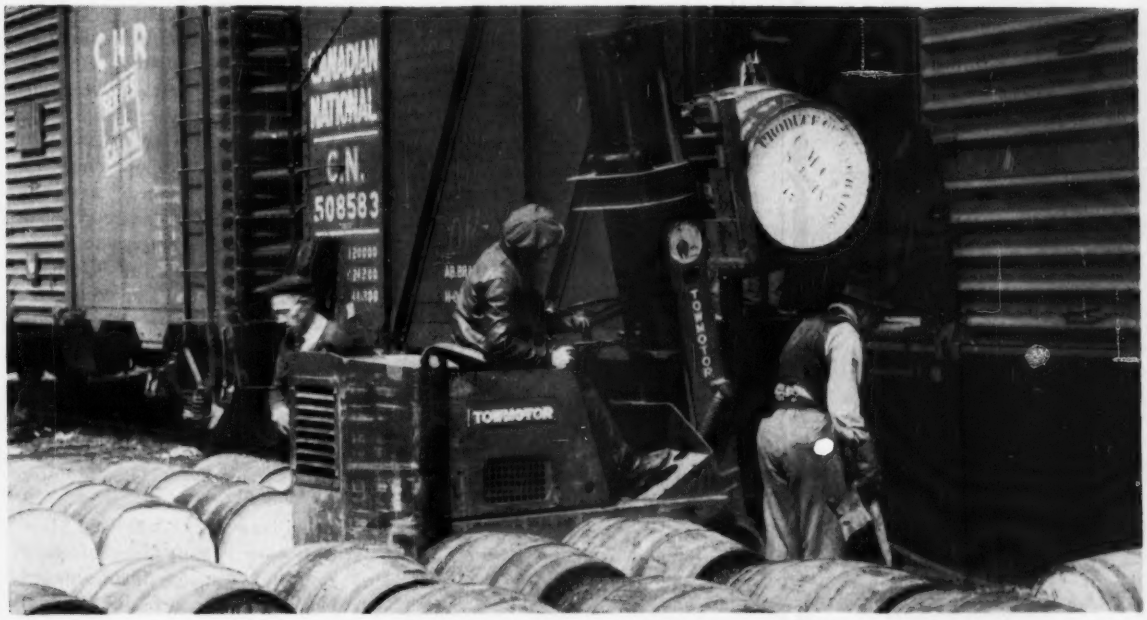

Transportation, distributor sales are major concerns of cost-conscious Canadian chemical management.

Distribution: Key to Canadian Sales Costs

Distributor selling last week held the attention of Canadian chemical process management currently intent on getting an accurate breakdown of the many factors affecting the cost of chemical selling.

Stimulus for management thinking on selling costs and distribution problems was the Chemical Institute of Canada's recent conference on "The Canadian Chemical Industry, Selling —What Does It Cost?" One upshot of the one-day conference in Toronto was the realization that Canada's chemical distributors are faced with many complex problems—a number of which are significant to U.S. CPI management, and some that are not common to the U.S. industry.

Heavy sale of imported chemicals, for example, puts the Canadian distributor squarely in the middle—between his loyalty to Canadian suppliers and the lower-priced imports being offered by European and Japanese sources of supply.

In addition, there's the reputation gained by Canadian chemical producers that they sell the "gravy" products, leave the "hamburger" items to the distributors.

Imported Chemical Sales: J. H. Alexander, vice-president of McArthur Chemical Co. Ltd. (Toronto), citing the $293 million worth of chemicals and allied products imported by Canada in '57, told conferees that distributor selling of imported chemicals has a great potential in the Dominion. He warned, however, of the intense competition from major Canadian chemical companies that import products manufactured by their U.S. and European parent companies, and from local importers operating with practically no overhead. "Even New York brokers are vying for a share of the lucrative market," he said.

Conferees agreed that despite the many similarities between the Canadian and U.S. chemical markets, the reaction of those markets to the sale of imported chemicals is quite different. The Canadian market is more internationally minded, Alexander pointed out. This, he said, is evidenced by the higher volume of low-priced chemical imports in Canada than in the U.S.

He added that comparatively high duties on chemical imports into the U.S. are only partly responsible for the difference. Another reason: U.S. buyers' concern over quality, delivery and the necessity to support the national manufacturer.

While the Canadian distributors also must concern themselves with loyalty to Canadian suppliers, it was pointed out, the distributors must evaluate the situation, ask these questions: Do the lower-priced imports offered by European and Japanese sources represent a temporary dumping of surplus products that will dry up as more favorable markets develop closer to the foreign manufacturer? Or, if the situation continues, will the Canadian suppliers lower their prices to meet and hold out foreign competition?

Another area to consider when buying imported chemicals, Alexander warned, is the longer delivery time required. "To obtain the lowest price, a buyer must order on what we call a "direct-import" basis—i.e., goods are shipped direct from domestic supplier to customer's plant and not warehoused en route. When an overseas supplier is involved, there is usually a delay of from four to eight weeks between the time the order is

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placed and the time the goods are received."

'Gravy' Selling: Conferees agreed that there is intense competition between distributors and the basic chemical producers. According to Howard Oster, vice-president and manager of Eaton Chemical and Dyestuff Co. (Toronto), the reputation that basic producers have — that they sell the "gravy" products on a direct basis, let the distributors sell the "hamburger"—could be dispelled, if the facts were presented, but he cited a "disquieting trend."

According to the Canadian Census of Distribution for '41-'51, the sales branches of chemical and drug firms increased their sales 164.4%, Oster pointed out. During the same period, distributor sales rose only 74.4%. Recent indicators show that the pattern is continuing. "I suggest," he said, "that this policy of direct sales by basic producers is shortsighted and, in the long run, can only make it more difficult to establish a sound Canadian chemical industry. It simply encourages the distributor to seek alternate, foreign sources of supply."

Despite general agreement that Canadian chemical distributors face many difficult problems, the distributors were optimistic. They see an Ontario population of 10-12 million by '80 (94% residing in urban areas), substantial gains in transportation and distribution facilities and techniques (including wide use of collapsible rubber containers, or Seal-Bins; collapsible rubber tanks with 15,000-50,000-gal. capacity; dry, powdered, prilled or pilleted bulk petrochemicals handled pneumatically; special barges for inland waterways; automatic palletilizer equipment for stacking cases on pallets in an interlocking arrangement adjusted to fit any size of rectangular container; and complex roller conveyor systems that cut time and manpower).

In many instances, widespread application of those transportation and distribution techniques by Canadian chemical distributors and manufacturers will merely mean that they are beginning to catch up with their U.S. counterparts. On the other hand, the obvious awareness of the need to progress means more selling and distribution effort, more competition for U.S. exporters.

Snipping Shipping Bills

High distribution costs were under fire again last week on a broad front. Several widely scattered meetings pointed up the chemical process industries' growing concern with huge distribution bills, tabbed by some at nearly 80% of the U.S. gross national product. Their big hope: "containerization"—coordinated transport using "families" of cargo-carrying units.

In Detroit, at American Standards Assn.'s tenth national conference on standards, progress was reported in two important areas:

(1) Near-agreement on standard sizes for cargo containers.

(2) Just-published standards on pallet sizes, chopping to 11 the number of sizes suggested for U.S. industry use.

And in New York, American Management Assn. held its first conference on distribution management, named the biggest obstacle to faster adoption of the containerization concept: lack of a "catalyst" (sponsor) to speed up, and coordinate the "reaction" (shipper-carrier cooperation).

Pros and Cons: One feature of the AMA conference was a lively panel discussion on the benefits and problems inherent in containerization. On the plus side:

- Reduced packaging, crating costs.
- Lower rates through volume shipping.
- Faster service via quicker loading, unloading and turnaround of transportation equipment.
- Reduced damage and pilferage.

These are negated by some current realities—fully coordinated transportation (air, land, sea) in families of units is still a long way off, and many roadblocks exist.

One block: a system of standard containers has not yet been accepted. Fortunately, the recently published ASA standard pallet sizes (eight rectangular, three square, compared with the more than 300 sizes now used) represents some progress in a closely related area.

Another big obstacle, says Seatrain Lines President John Weller, is the "compartmentalization" of the U.S. transportation system. Federal regulations, says Weller, "presume that either the trucker or the railroad should do the whole job. They do not provide for cooperation between dif-

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ferent modes of transportation, which is absolutely essential before the container [concept] can contribute fully to our economic development."

But Fred Muller, Jr., of American Car and Foundry, Inc., division of ACF Industries, pointed to some hopeful areas: "It's a good bet that ASA soon will accept, as standard, cargo units 8 ft. wide, 8 ft. high, 10, 20, 30, 40 ft. long. These units will be interchangeable among railroad cars, trucks, ships and cargo airplanes."

Progress in the CPI: Another AMA panel member, Du Pont's supervisor of materials handling, Roland Puder, commented on his firm's progress with containerization. Examples:

- Recent shifts from 55-gal. drums to larger, portable tanks for international shipment of tetraethyl lead.
- Replacement of multiwall bags with huge returnable metal containers for shipping various bulk solids.

Other CPI companies are watching developments closely for containers that offer substantial cost savings. Among the best bets: pneumatically loaded trucks and hopper cars for solids, huge sausage-like collapsible bags carried on flat-bed trucks, or floated on water.

Carrier's Viewpoint: Speakers at the AMA conference reported a growing interest among carriers as one of the fruits of the containerization boom. The reason: containerization is expected to slash their freight loss claims, sharply.

At a recent meeting of Eastern Industrial Traffic League, C. A. Naffziger, head of freight loss activties for Assn. of American Railroads, told the league that loss claims topped $114 million in '58—an average of $37.40/-claim, compared with $10.41 in '42. More carriers are expected to embrace the containerization development as they realize the savings they can effect in damage prevention.

DATA DIGEST

- **Surfactants:** New booklet describes properties and uses of surfactants, eight of the nonionic (polyethylene glycol-ether) type, four of the ionic type—based on sodium salts. Typical applications include adhesives, metal cleaners, photographic chemicals, wax polishes, sanitizers, gas well treating agents, paper products. Union Carbide Chemicals Co.

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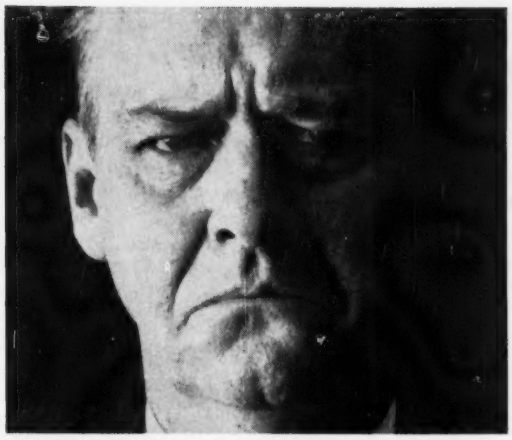

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SALES

• **Chlorinating Agents:** Bulletin summarizes some common chlorinating reactions, lists properties of chlorinating agents. Those described are elemental chlorine, hydrogen chloride, sulfuryl chloride, thionyl chloride, and chlorides of sulfur, antimony and phosphorus. Tables of physical properties are included along with complete literature references. Hooker Chemical Corp. (Box 344, Niagara Falls, N.Y.).

• **Polyvinyl Chloride Solvent:** Bulletin presents laboratory data on the use of dimethylformamide as a resin solvent for polyvinyl chloride. Its use is suggested for roller and spray applications and for baked-on coatings. Industrial and Biochemicals Dept., Du Pont (Wilmington 98, Del.).

• **Esters:** Catalog gives specifications, properties and solubility data on fatty acid esters. Included are those of butyl and propyl alcohols, ethylene glycol, diethylene glycol, propylene glycol, glycerol, and the polyethylene glycols. Kessler Chemical Co. (Philadelphia).

• **Aluminum Bonding:** Structural adhesives and methods of bonding aluminum panels and coils are described in a new booklet. Reynolds Metals Co. (Richmond 18, Va.).

• **Insecticide Concentrate:** Technical bulletin details the properties of concentrate combining malathion and Pyrenone. Claimed to be effective against roaches and other crawling insects, the new concentrate reportedly combines kill-efficiency of Pyrenone with residual effects of malathion. Fairfield Chemicals (441 Lexington Ave., New York).

• **Styrene-Butadiene Copolymer Latex:** Booklet describes new styrene-butadiene copolymer latex designed for interior paints. Discussion includes particle size, water resistance, scrubability and methods of preparation of paint evaluations. Plastics Division, Koppers Co. (Pittsburgh 19).

• **Military Packaging:** New two-volume manual on military packaging requirements, titled "Joint Military Packaging Outlines," is available. Volume 1 discusses cleaning, drying and preserving processes; volume 2 outlines methods and materials for packing, lists Dept. of Defense requirements, freight regulations, marking rules. OTS, U.S. Dept. of Commerce, (Washington 25, D.C.).

Tracers

TO THE CHEMICAL PROCESS INDUSTRIES

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Orr & Stembower Model No. 3020401 Boiler 40 h.p.; Columbia Boiler 5 h.p. Type HRT; McKee Dowtherm Boiler 30 h.p. 400 gallon Double Arm Mixer with 10 h.p. Motor Drive. American Aniline & Extract Co., Venango & F Sts., Philadelphia 34, Pa., or Calvert City, Ky.

860 sq. ft. T316 Stainless Heat Exchanger, ASME code 75# WP. Removable bundle, 1953. Perry, 1415 North 6th St., Phila. 22, Pa.

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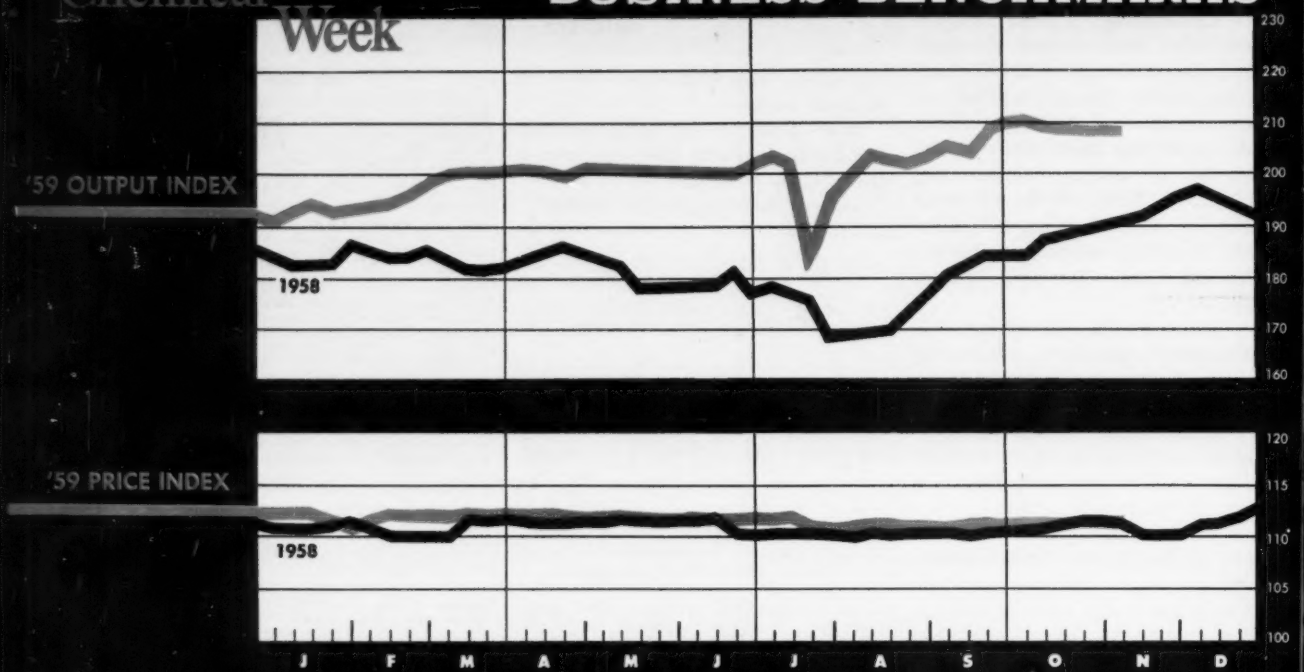
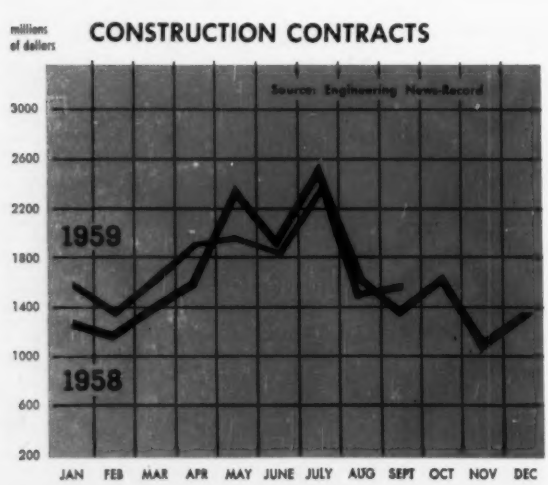


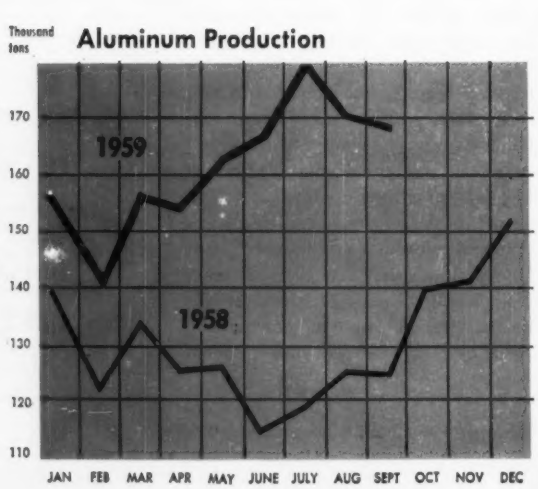
NOVEMBER 7, 1959

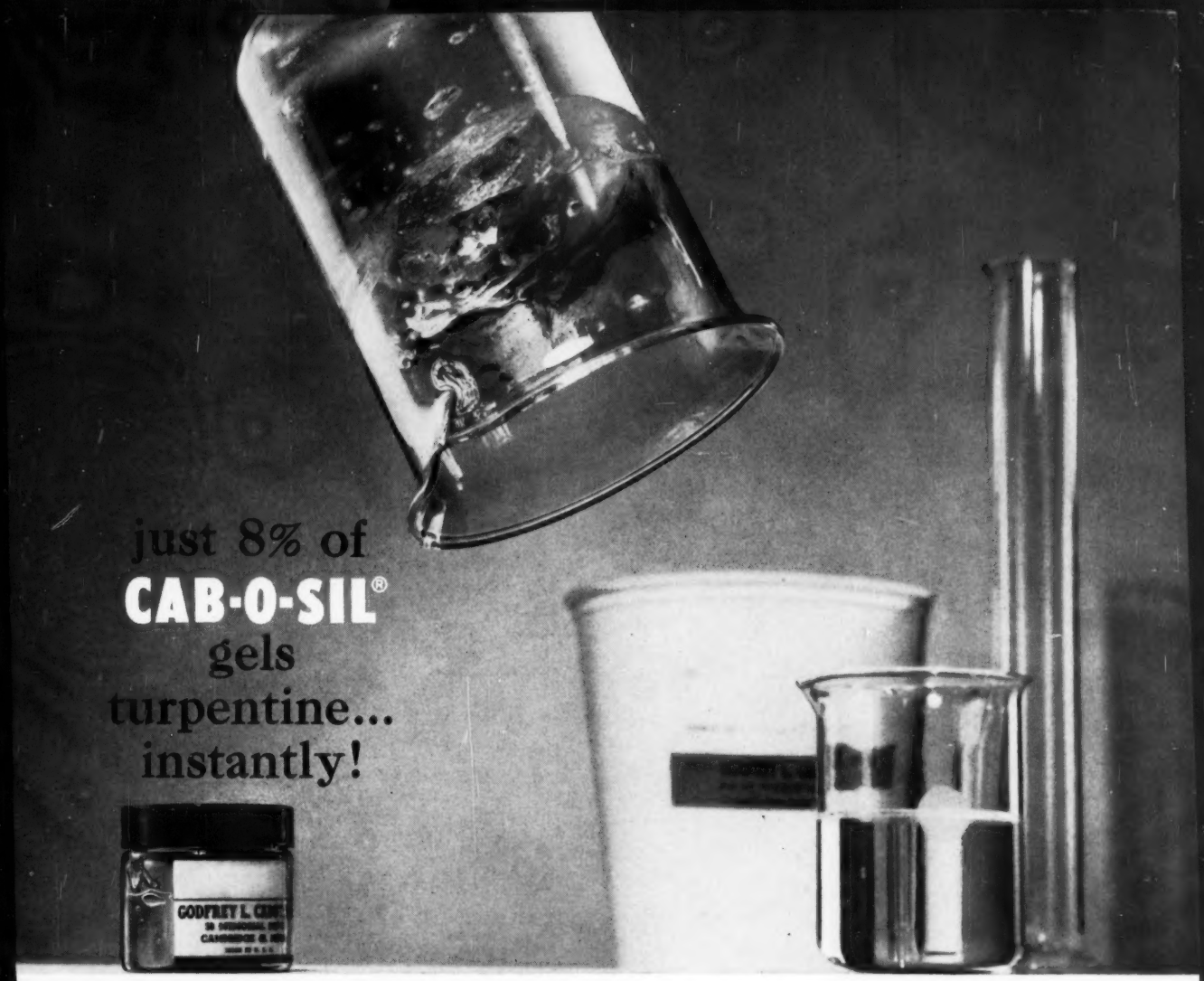
WEEKLY BUSINESS INDICATORS	*Latest Week*	*Preceding Week*	*Year Ago*
Chemical Week output index (1947-1949=100)	209.0	209.5	191.0
Chemical Week wholesale price index (1947=100)	111.5	111.5	110.5
Stock price index (12 firms, Standard & Poor's)	58.07	57.68	45.45
Steel ingot output (thousand tons)	368	371	2,024
Electric power (million kilowatt-hours)	12,762	12,861	12,174
Crude oil and condensate (daily av., thousand bbls.)	6,875	6,839	6,919

PRODUCTION INDICATORS ('47-'49=100)	*Latest Month*	*Preceding Month*	*Year Ago*
All manufacturing	152	153	139
Nondurable goods manufacturing	145	146	133
Durable goods manufacturing	158	159	145
Chemicals and allied products	213	213	187
Industrial chemicals	248	248	204
Petroleum and coal products	132	134	135

CHEMICAL CUSTOMERS CLOSE-UP







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